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HEALTH THROUGH PREVENTION AND CONTROL OF DISEASES

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HEALTH THROUGH PREVENTION AND CONTROL OF DISEASES

By *C.*

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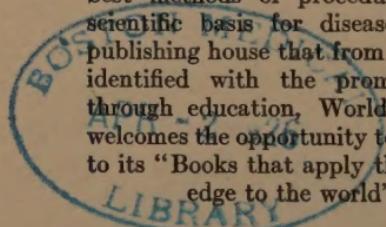
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Pioneer work has gone into the making of *Health through Prevention and Control of Diseases*. Dr. Wood and Dr. Rowell are leaders in constructive health work in the schools. From their practical experience has developed a systematic program for the prevention of contagious diseases among school children. And here they have made available for the first time, under one cover and in clear-cut form for use in schools, the best methods of procedure and the best scientific basis for disease control. As a publishing house that from its start has been identified with the promotion of health through education, World Book Company welcomes the opportunity to add this volume to its "Books that apply the world's knowledge to the world's needs."



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PREFACE

To MAKE THE SCHOOL A HEALTH CENTER

THE school, from its very nature, is completely constituted to act as a disease center, an assembler and distributor of children's diseases in the community.

Efficient application of the best knowledge of *disease prevention* is indispensable to the task of making the school a successful center of health control and health influence.

It is believed by some of our best authorities that the chance of the child for life and health depends as much, perhaps even more, upon protection against certain infectious and communicable diseases than upon the care and promotion of personal health, which is the result of personal hygiene and the practice of health habits.

It is the purpose of this book to give constructive help in the campaign to substitute health for disease in every school.

The plan or program set forth here is intended for teachers, school officials, school physicians, and school nurses. It is intended also to give useful information to parents, in order that they may coöperate with school authorities in securing the best health protection for their own children and for all children in the school and the community.

The authors gratefully acknowledge the interest and criticism of Dr. Haven Emerson and Miss Harriet Wedgewood.

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LOCAL AND STATE REGULATIONS

Local rules and regulations for the control of communicable diseases should be obtained from the local Board of Health. A copy of the state regulations also should be obtained by writing to the state Board of Health at the state capital. It would be well to paste the regulations in this book, using the blank page preceding the index and the inside of the back cover.

HEALTH THROUGH PREVENTION AND CONTROL OF DISEASES

INTRODUCTION

EXPERIENCE has shown convincingly that contagious diseases in schools are not prevented or controlled if the exclusion of pupils is made only when — or if — the diseases can be diagnosed. Several of the communicable diseases of childhood are very contagious (or catching) for one or more days before the appearance of symptoms on which diagnosis can be made. Measles, for instance, is highly contagious one to three days before any rash can be seen.

Educational authorities and health authorities, as well as up-to-date physicians, are progressively adopting this motto: *isolate* (exclude the pupil from school) *on suspicion and diagnose afterwards*.

It is because it is often impossible to determine whether certain early signs, such as sore throat, indicate the onset of a cold or some other contagious disease, and because respiratory diseases form the most important causes of absences from school (from forty to one hundred per cent), that a large proportion of the preventive campaign against acute diseases among school children is directed against the common cold. Successful "Stay at Home with a Cold" campaigns have been conducted in several school systems.

In the Lincoln School of Teachers College¹ it is con-

¹ Mason, "Health and Regularity of School Attendance," *Teachers College Record*, Vol. XXIV, No. 1 (January, 1923), pages 33-35.

sidered not sufficient to exclude from school all children with colds for the first two days of illness. Exclusion must continue as long as these children are sneezing or coughing or have any considerable nasal discharge. This keeps each child who becomes ill out of school a day or so longer than had previously been thought necessary; but the more favorable figures of the total school attendance under the stricter rule indicate that, during the same period of time, the number of cases was less, as was also the total number of days lost from school.

Treat the common cold like other highly infectious diseases and keep the child who has a cold out of school as long as he has symptoms of the disease. The trouble with the present régime is that children usually stay in school just about one day too long at the beginning of a cold, when it is most contagious.

Until parents and pupils are better informed and give better coöperation with reference to this school problem, it will be necessary to

1. Assist parents by all possible means to a better understanding of the serious possibilities of mild respiratory diseases.
2. Foster a willingness on their part to watch for the first signs of these illnesses.
3. Persuade or compel them to keep sick children from school until they are well.

It is unwise to ask or to expect any person, other than a physician, to make a diagnosis of disease. Yet it is possible for a school to carry out an effective defensive and offensive program against contagious disease without diagnoses on the part of any school officer unless he is a physician. *This is the theory on which this book is built.*

Responsibility for the diagnosis of diseases may be and should be assumed by physicians. Yet the school principal, teacher, nurse, or doctor may exclude pupils who develop certain signs (see page 22), which in many cases are the early indications of contagious diseases. When such children are excluded, the other pupils are protected.

How long an excluded child must remain away from school depends on

1. Whether the child's own physician finds that he has a definite illness, which is or may be communicable. If not communicable, the matter involves the health of one individual only.

2. How soon the physician's services are obtained after the child is excluded from school. Early treatment means earlier recovery from disease.

The chief duty in the school's disease-control program, in addition to the developing of health-promotion projects, is to foster in parents, teachers, and other adults a social conscience and a responsibility for control and prevention of diseases in schools. Such intelligent understanding, social conscience, and responsibility should find practical expression in

1. Inspection each morning by parents (*without asking children about their feelings*) to see whether children are fit for school that day and free from suspicious observable signs.

2. Inspection daily, by the teacher, of all pupils when they come to school and during the school session to determine whether they are in usual health and free from suspicious signs.

3. Exclusion from school, by the person authorized

to exclude pupils, of those who show any of the signs for exclusion, as approved by the administrative authorities of the school. There should be in every school some person in constant attendance, either a teacher or other school official, properly trained and qualified, who is authorized to exclude from the school pupils showing signs of health disturbance.

4. Readmission to school on the basis of the impartial interpretation and enforcement of uniform regulations for readmission as adopted by the school authorities and acceptable to the health authorities.

The purpose of this book, then, is distinctly *not* to give directions for the *diagnosis* of disease, but to furnish a practical method for prevention and control of diseases in schools.

CHAPTER ONE

THE POSITIVE SIDE OF COMMUNICABLE DISEASE CONTROL

THE home, the school, and the pupil himself have before them the absolute possibility of preventing many cases of communicable diseases.

WHAT THE HOME CAN DO

In addition to being the first line of defense of the community and the school against communicable diseases, the home may also lead in positive measures to lessen the likelihood of the child's contracting disease from germs which he must encounter wherever he goes.

Protective measures in the home should include these:

1. See that the child is protected against contagious diseases by all scientifically proved methods or have him tested to make sure he does not need such protection. No other method affords the degree of protection that is possible by this means.
2. Provide a proper, healthful routine of living.
3. Encourage those habits and practices which serve to protect the child from sickness.
4. Provide for early discovery and correction of remediable health defects and for treatment of defects which cannot be cured.
5. Avoid unnecessary exposure of any member of the family to disease, especially in epidemics, at times when children's parties are an important means of spreading contagion.

Scientifically proved *methods of protecting an individual against contagious diseases* include :

- Vaccination against smallpox.
- Diphtheria protection.
- Scarlet fever protection.
- Typhoid vaccination.

Methods of determining susceptibility are

The Schick Test to determine susceptibility to diphtheria.

The Dick Test to determine susceptibility to scarlet fever.

The typical reaction in smallpox-vaccination "takes" to determine susceptibility to smallpox.

The healthful routine of living includes :

1. Ample sleep. Younger children should have midday rest periods as well as ample sleep at night.
2. Plenty of outdoor air and sunshine. As far as possible, play should be out of doors — the more fresh air, the healthier the child. It is possible to have fresh air inside the home, but more difficult to get plenty of sunshine too.
3. Proper food. This includes a well-planned diet; plenty of milk and other fluids; sparing use of sweets.
4. Careful attention to elimination. It is apparently true that the individual with poor elimination (constipation) has less resistance to disease.
5. Development of habits of personal cleanliness, such as frequent washing of hands, brushing of teeth, cleansing of mouth and nose. Some persons advocate the routine use of gargles of various types as a protective measure; but gargles are unnecessary and

undesirable, since they lessen the protective powers of the mouth through dilution of the mouth secretions. If a gargle must be used for any reason, the simplest, cheapest, and best is a solution of table salt (one tea-spoonful to a glass of water).

The home should *develop protective conduct* so that it will become habitual and automatic.

Parents can and should train children to keep away from persons who have coughs or colds, and from persons who apparently are ill. The child need not emphasize what he is doing at the time, for this protective measure can be carried out in a manner that will not give offense to the sick person.

The child should be further taught that when he is ill, whether from a cold or from any other cause, he should have as little contact as possible with other individuals. Particularly, he should not laugh or talk into their faces; he should not kiss other persons or have any close contact with them.

Adults are gradually taking the attitude that, if any individual cares so little for his fellows that he will go about publicly with a communicable disease (and a cold is one of these diseases), he deserves to be shunned or snubbed. No thoughtful person will intentionally or carelessly expose another person to disease.

The home should *develop personal habits* and should attend to the *correction of physical defects*.

Too few children are taught when and how to use the handkerchief. Many pupils who are supposed to have good health habits, when asked to cough during a health examination, will cough directly into the examiner's face. Parents should instruct their children

in the use of the handkerchief for cleaning the nose and for covering the nose and mouth if they must sneeze or cough. At least, a child can be taught to cough with head averted and into the palm of the hand, when he has to cough. The resounding sneeze (so popular among youthful classroom humorists), distributing germs far and wide in a room, should be eliminated by education in the home.

The child with physical defects, such as diseased tonsils and adenoids, has lowered resistance to contagious diseases, especially scarlet fever and diphtheria. The parent ought to provide remedial attention to such defects, as a protective measure, if for no other reason.

WHAT THE SCHOOL CAN DO¹

The school can supplement the training suggested for the home. Sound teaching begun in the home may be continued in the classroom, and good reasons may be shown for the advice given and health practices advocated.

1. The school has several types of duties under a positive disease-control program.

Educational duties, including the development of habits and attitudes which lead to these results :

1. The child will protect other members of his group.
2. The child will protect himself. The program suggested for the home is also followed out in the classroom. Recognizing and avoiding poison ivy and other hazards to health or life may well be emphasized in the school.

¹ The relationship of the contagious disease program to other health work is discussed in *School Health Supervision and Medical Inspection* by Wood and Rowell, published by W. B. Saunders Co., Philadelphia.

Protective duties (hygiene of instruction and administration). It is a wise policy to include these measures:

1. Use the principle of "Individual objects for individual pupils." Cross infections of pink eye have occurred through pencils used in common by the pupils in a classroom. Clay for modeling should be in individual portions, and only enough for the day's work should be supplied. Books ought to be individual as far as possible. When the same book is used by different pupils over several years, it should be kept in service only as long as it is clean. Serious criticisms have arisen because of dirty books. A book should be destroyed or sterilized by suitable methods if there is any danger of its becoming a source of infection to other pupils. Recent research, however, has seemed to cast doubt upon the former belief that tuberculosis could be transmitted through books.

2. Make it safe for pupils to use jointly certain objects, such as kindergarten toys. Eliminate the danger of cross infection from such objects by watchfulness on the part of the teacher and by frequent careful cleansings of the playthings. Psychological clinics often sterilize test objects after each use. Schools are too careless about such matters.

3. Permit no animal pets in the school building. The use of pets in schoolrooms, such as dogs or cats, is supported enthusiastically by many. From a health point of view, pets are dangerous and should not be permitted in schools; not, however, because of rabies, for it is possible to inoculate pets against this disease, and in Detroit this is required. Pets should be eliminated because,

- a. They may transfer contagious diseases from pupil to pupil, since the germs catch in the animal's fur or, in some diseases, the animal may become infected.
 - b. Certain children may develop diseases of the type of hay fever and asthma through their peculiar sensitivity (allergy) to proteins contained in the hair of the various domestic animals.
4. Maintain a healthful mental and emotional atmosphere in the schoolroom by a teacher trained in mental hygiene.

Environmental duties (school sanitation). It is useless to ask a child to wash his hands unless a suitable place for this is provided. The school ought to provide :

1. Healthful school conditions through sanitation of the building.
2. Materials which cannot transmit disease, such as paper towels in place of the old roller towels (now forbidden by law); individual paper drinking cups or suitable types of sanitary drinking fountains. All these must be kept clean and attractive. One difficulty with many drinking fountains is that the water is often so warm as to be unpalatable. The best type of sanitary drinking fountain in present use is the one with the inclined water jet, covered on one side by a porcelain or metal guard, so that it is impossible for the lips to touch the fixture where the water emerges.
3. Means for carrying out health procedures. This includes facilities for washing the hands before eating, after use of the toilet, and whenever the hands become dirty; clean, odorless toilet rooms that are well-

ventilated; playgrounds without hazards, such as protruding rocks.

WHAT THE PUPIL CAN DO

Pupils, if they will, can coöperate in disease control with benefit to fellow pupils and to themselves by these measures:

1. Follow out carefully instructions given to them, such as to cover the mouth whenever they must cough.
2. Report to parents or teachers if they feel ill. This may prevent an epidemic.
3. Understand and perform the duties of good school citizens, such as strict obedience to the health laws of the school and the community.
4. Observe signs of health disturbance in their fellow pupils and playmates and report such observations to the teacher or parents. High school students are often very careless in relation to this duty.
5. Develop good health habits, such as these:
 - a. Live healthfully out of doors as much as possible.
 - b. Eat the right sort of meals, even when away from supervision.
 - c. Care for personal cleanliness and elimination.
 - d. Keep everything but foods out of the mouth.
 - e. Keep everything out of nose and ears.

In general, the development of a sense of health responsibility in a child will result in his becoming an excellent protector of his own health and that of the classroom. The problem is to develop these desirable habits and attitudes without making pupils conscious of the problem. This can be done and is being done.

CHAPTER TWO

FUNDAMENTALS FOR CONTROL OF COMMUNICABLE DISEASES IN SCHOOLS

ALL plans for the control of communicable diseases are based on knowledge of

Incubation period of the disease.

Method of transmission.

Degree of protection possible in a given school.

Effective plans for the control of communicable diseases in school must include:

1. Means of knowing what children in any classroom or group are likely to take the disease if exposed. Also what children are immune from the disease, either through having had it recently enough to assure immunity at the time of the latest exposure, or through the complete fulfillment of the requirements for artificial immunity by serum or vaccine against smallpox, diphtheria, or scarlet fever.

2. A method of discovering sick or ailing children in the earliest possible stage of illness, and excluding them from the classroom and from other contacts with school children, until the signs of health disturbance are proved to arise from a non-contagious origin.

3. A procedure for

a. Excluding the child from the classroom.

b. Examining him more carefully elsewhere, in the school office or the principal's office.

- c. Definite decision by a qualified and authorized person, as to whether the pupil may remain in school or should be sent home.
 - d. Notification of parents that he has been excluded.
 - e. Notifying the health authorities, where such notification is required by the health statutes.
 - f. Making sure that the child receives skilled medical treatment as needed.
 - g. Requiring the return of the child to school
 - (1) when the disease process or illness has ceased; (2) when it is no longer communicable; and (3) when the child has convalesced successfully and is physically fit to resume all or a considerable portion of his school program.
4. Definite provision for dealing with
- a. Other children in the home of the sick child, including special provision for children who have had the disease, and for children who have not had it.
 - b. Other children exposed to the case (pupil who is ill) outside of school, including special provision for those who have had the disease and those who have not had the disease.
 - c. Children exposed at school, especially those who have any possible contact with other pupils. Such provision must include plans for exclusion for a suitable period and re-admission at the earliest safe time.

CHAPTER THREE

HOW TO KNOW WHICH CHILDREN ARE SUSCEPTIBLE

WHEN a child is first admitted to school, it is the duty of the teacher, the nurse, or other designated person to determine:

1. What contagious diseases the child has had.
2. What artificial immunities the child has acquired by vaccination or inoculation, as against smallpox, diphtheria, and scarlet fever.
3. How recently the child has acquired these immunities, if at all.
4. Whether he has been shown, by testing, to be safe from diphtheria and scarlet fever. If so, when.

It is wise to make the same determinations for all other children in the family. Hence, records should be made of those in the family who are in school, specifying school and grade. Such a record should be kept up-to-date always, by noting on the form whenever a pupil has any contagious disease or has been immunized against the disease.

Most of the material of one year's chart may be transferred to the chart for the next year or semester.

The form on page 15 will prove useful as a Classroom Immunity Chart. By means of this chart, it is possible to see at a glance what may be expected in any classroom when the pupils are exposed to any contagious disease.

Abbreviations used on the chart are as follows:

C. P.	Chickenpox	Mumps	Mumps
Diph.	Diphtheria	Sc. F.	Scarlet fever
G.M.	German measles	S. P.	Smallpox
I.P.	Infantile paralysis	Wh.C.	Whooping cough
Meas.	Measles		

WOOD-ROWELL CLASSROOM IMMUNITY CHART

YEAR 19____ SCHOOL _____ ROOM ____ GRADE ____ TEACHER _____

In using the chart,¹ it would be well to follow this plan:

1. Fill in the names of the children in the column marked *Pupil*. Write the names in alphabetical order, giving the family name first.
2. In the space opposite the child's name and under *Contagious Diseases*, write the year in which the child had a given disease. If the year cannot be determined, write "Yes," or if doubtful, write "?". Do not write anything if the child has *not* had the disease.
3. In the column marked *Family*, note the names of other children in the family who are in school, using the child's first name, and some code for grade and school, as "John, V, L" for John, who is in the fifth grade in the Lombardy School.
4. In columns marked *Immunization*, note year of (a) last successful certified smallpox vaccination; (b) inoculations against diphtheria or scarlet fever, after these have been proved by further testing to be successful and in effect.

There are three types of immunity: (1) a limited or complete immunity following an attack of certain diseases, such as measles; (2) artificial, as acquired by successful vaccination or inoculation against the particular disease, as in smallpox and diphtheria; (3) natural. Natural immunity is either inherited or acquired through many small exposures to the disease. Such exposures are too mild to result in an attack of the disease. Such immunity can sometimes be demonstrated, as by the Schick Test and the Dick Test.

¹ Permission to use this form in any school or system of schools may be obtained from the authors.

If a child is shown by testing to be immune to one of these diseases, write "neg." and the year in the space on the chart under the contagious disease in question.

If the immunity is a result of inoculations, write year and "artif.," meaning artificial as compared with natural, as shown by a negative test for immunity (where no inoculations are needed).

Control charts based on seating plans of schoolrooms have been found to be unsatisfactory because they were based on the theory that the pupils in the vicinity of the seat of the sick child were most likely to take the disease. This could hold true only under the most rigid classroom discipline of the old-fashioned formal schools. Under the present methods of teaching and games, close contacts are made between all pupils in the classroom. Therefore all the pupils are in about equal danger of taking a disease from contact. This was demonstrated at the Horace Mann Schools, New York City. It is, however, very important to know who are the special playmates of a sick child, and the classroom teacher usually can supply this information.

CHAPTER FOUR

HOW TO DISCOVER HEALTH DISORDERS IN CHILDREN

To discover health disorders in children, two procedures are needful:

Inspection in the home before the children start for school.

Classroom morning health inspection.

A careful individual examination should be made by the classroom teacher in elementary schools each morning, as the first duty of the day; and a policy of watching should be adopted by the teacher of every classroom during the entire school session.

Morning health inspection is expected to discover:

1. What children are, for any reason, unfit to take any part in the day's school program.
2. What children may participate in a limited school program.
3. What children are able to accept the full school program for the day.

Such a plan protects each child from exposure, to a considerable extent, to contagious or infectious diseases during school hours. This degree of protection is increased when there is a distinct and constant effort on the part of instructors to detect any signs of ill-health during the entire school day.

Morning health inspection also protects each child against participating fully or partly in a school program which might result in injury to his health, in case health is not normal.

No plan can be devised which will insure absolute

(100 per cent) protection in the school against communicable diseases. A good system of morning inspection and careful watching during the school day will greatly lower the number of disease contacts (persons exposed) occurring in school, and hence caused by attendance at school.

Coöperation of parents in keeping children who are not in normal health at home and away from other children, will also diminish the number of cases arising from any one source. This practice may be established oftentimes by coöperation between parents and schools, such as is illustrated by Parent-Teachers Associations.

DUTIES OF HOME AND SCHOOL IN MORNING INSPECTION

1. *Duties of the parent.*

Whether or not the parent accepts the duty, he or she is responsible for sending to school a child who is, as far as the parent is able to tell, in as good health as usual. This involves a practical inspection by a parent, or some person *in loco parentis*, before the child is allowed to start for school in the morning.

This home inspection should avoid :

- a. Making the child uncomfortable and self-conscious.
- b. Use of subjective suggestions, for example asking the child how he feels. *Inspection should be based on practical observation and objective inspection.*

Parents may use as a standard for health inspection the Indications of Health Disorders suggested for teachers on page 22.

2. *Duties of the classroom teacher.*

The teacher is the only person in the school who can always be on hand to make the school morning

inspection. To provide other means would require a health service involving too many people and too great expense. The school cannot and should not attempt to provide other means than the classroom teacher.

A recent study of health service¹ in a large number of city school systems shows that classroom teachers are taking a prominent part in health inspection.

The table on page 21 indicates that the most common type of distribution of responsibility was teacher to principal to school nurse to school physician. It shows also that many school systems reported no definite organization for daily inspection of pupils.

3. Duties of school executives.

Teachers, when asked to perform morning health inspection, sometimes complain that no time is available for it. There are two possibilities here:

- a. School executives may allow the first five to ten minutes of the school day for this examination and assure themselves that the time allotted is used for this purpose, and that the examination is actually made. As soon as this morning inspection is established in routine, only five minutes is needed for the examination of forty to fifty pupils (a full-sized classroom). Very young children require more time than older children.
- b. The teacher may examine each pupil before school begins.

Under the method advocated here, the examiner is in less danger of contracting a communicable dis-

¹ Wood, *Health Service in City Schools of the United States*, Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, 1922, page 13.

DISTRIBUTION OF RESPONSIBILITY FOR DAILY INSPECTION OF PUPILS FOR THE CONTROL OF COMMUNICABLE AND OTHER ACUTE DISEASES

321 Cities Reporting

	NUMBER OF CITIES	PERCENTAGE
No definite distribution or relation of responsibility	105	32.7
Teacher to principal to school nurse to school physician	51	15.9
Teacher to principal to school nurse	35	10.9
Teacher to school nurse	29	9.0
Teacher to school nurse to school physician	27	8.4
Grade teacher	20	6.2
School nurse	13	4.0
Teacher to principal to school physician ..	11	3.4
Teacher to principal	9	2.8
Teacher to principal to superintendent to health officer	6	1.9
Teacher to school physician	5	1.6
Health officer	3	.9
School physician	2	.6
Teacher to principal to parent	2	.6
Principal	1	.3
Parents	1	.3
Parents to teacher to school nurse to school physician	1	.3
Total	221	99.8

ease than if an undiscovered case of contagious disease were in the room during the school session. Teachers now contract diseases such as measles or scabies (itch) from such "missed cases."

INDICATIONS OF HEALTH DISORDERS IN CHILDREN

When a child shows at home any of the signs listed on page 22, he should remain at home and away from other children, until the adult in the position of responsibility, either parent or physician, is certain that the child has

no contagious disease. It requires at least twenty-four hours to be sure of this.

When a child shows any of these signs at school, he should be excluded from the classroom and sent to a designated room (which may be used as an isolation room) and to a designated person, for further examination. He should then be excluded from the school until permitted to return under the school rules. Such rules should require examination and certification by some authorized school authority. This person may be the doctor, the nurse or other trained non-medical examiner, or the principal.

Children can be taught (without disturbing fear or attempt to deceive) to notice such signs in themselves or their companions and thus contribute their part toward protecting the school from contagious disease.

SOME SIGNS OR INDICATIONS OF HEALTH DISORDERS

Unusual paleness or flushing of the face

Running nose or sneezing

Red or inflamed eyes

Sore or inflamed throat

New cough

Swelling or tenderness of any kind, including
acutely swollen glands of the neck

Fever or unusual hotness of the skin

Earache or ear discharge

Faintness or dizziness

Nausea

Vomiting

Chills or convulsions (fits)

Failure to eat breakfast to which child is accustomed

Unusual condition of the child in relation to alertness, apathy, fatigue, inclination to play or study, ability to concentrate

Any other distinct change from usual appearance and behavior of the child

TECHNIC OF INSPECTION

In order to be sure that the inspection is actually made, a formal method is used. Educationally, an informal method might be preferable.

A common method is the *casual glance plan*. Here the examiner makes no definite attempt to examine each child but plans to look at each one briefly sometime during the first period of the morning — perhaps forgetting to do so, in the press of other matters. It is often no inspection at all.

A definite plan should be followed, suited to the age of the group examined.

1. Primary school plan.

In the kindergarten and the lowest grades, some form of game may be devised, which brings each child before the teacher, in good light, and makes possible a brief but comprehensive inspection of that child's condition that day. Sometimes, if each child is asked to greet the teacher in the morning, enough information may be obtained for all practical needs, provided the teacher is a keen observer. The elementary school plan may be used as an alternative.

2. Elementary school plan.

The teacher stands with her back to a good source of light. Each child passes before her, giving her a brief opportunity to notice all parts of the body.

The child can :

- a. Lift his own hair as requested by the teacher.
- b. Draw down his own lower eyelids.

- c. Throw back his head so that the edges of the nostrils may be seen.
- d. Open his mouth and say "Ah" so that the throat may be examined.
- e. Show the palms and backs of his hands with fingers spread.

This method requires five to eight minutes for forty or fifty pupils, depending on the skill and interest of the examiner and the age of the pupils.

Many believe that the teacher should never touch the child at all during this examination. Provided the teacher will observe the pupil keenly, it may not be necessary to touch any child. If she wishes to touch the pupil, no harm can be done, provided she *looks* carefully before she puts her fingers on the child. But since some teachers use any technic indifferently, it is probably best to forbid any teacher to touch the child. Remember, however, that the moment a child is seen to have any of the Indications of Health Disorders, he is not examined further by the teacher but is excluded from the classroom at once.

The teacher should wash her hands following the examination of any suspicious case (which is excluded), and also after the whole class has been examined.

3. Secondary school plan.

By the time a child reaches the junior high school, he is somewhat less susceptible to contagious diseases. For this reason, and because these older pupils are better able to inform parents or teacher of any disturbances which they may experience, it is sufficient, except in emergencies, that the class or "home room"

instructor make a genuine but informal inspection to make sure that every pupil is in good or usual health. If the spirit of good citizenship has been developed properly in the high school pupil, he may be asked to assume responsibility for self-inspection. In this case his presence at the school should be considered as his personal assurance that, as far as he knows, he is in normal health and fit for his school program.

EXTENT OF EXAMINATION

The parent or the child's nurse should examine each morning most of the body of any young child before permitting him to start for school. When a pupil reaches a more mature age, he may perform the duty of inspection himself and report to the parent that :

He is in good health and able to go to school ; or
He thinks he ought not to go to school, with a statement of his reasons.

The majority of parents at present fail to accept *any* responsibility for home morning inspection.

Legally, *the teacher* may make no more examination than is possible without disturbance of, or removal of, the child's clothing. However, as complete an examination as is feasible should be made.

In any case, the examiner is expected to detect any observable abnormalities connected with

1. Hair and scalp ; e.g., lice (*pediculosis capitis*)
2. Skin
 - a. Face ; e.g., unusual pallor or rash
 - b. Neck ; e.g., acutely swollen glands
 - c. Hands ; e.g., eruptions, such as itch (*scabies*) or poison ivy sores

3. Eyes
 - a. Lids and their lining; e.g., red or running eyes
 - b. Eyeball; e.g., redness
4. Ears; e.g., ear discharge
5. Nose; e.g., running nose
6. Mouth and throat; e.g., red and inflamed throat
7. Body; e.g., rashes, eruption of any kind, if new and more than a pimple or two on the face
8. General observations; e.g., limping, as from recent injury, previously unknown

Certain children who continually present signs which have been proved to be those of non-communicable disease, need not be sent from the room, provided the signs have not changed to any degree or have *lessened*.

Tongue depressors. It is unnecessary for a teacher to use a tongue depressor to examine a pupil's throat for morning inspection. Unskilled and careless persons gag children with these instruments. Have the pupil face a good light, and direct him to open his mouth widely, stick out his tongue, and say, "Ah." This affords an excellent view of the back of the throat.

Thermometers. In some school systems, the use of thermometers by teachers has proved unsatisfactory because —

1. Many were broken through carelessness or lack of skill.
2. Sterilization was too brief. Hence the thermometers became possible means of transferring disease from one pupil to another.

3. Usually the supply of thermometers was limited to a very few.

4. Readings were not accurate or satisfactory in too many cases.

Nevertheless, every teacher and intelligent parent ought to be able to use a clinical thermometer. The following technic is suggested:

1. Sterilize the thermometer by placing all except about half an inch of it, large end down, in sterilizing fluid. Bathing alcohol is the best available liquid to use. *Leave the thermometer in the sterilizing fluid at least five minutes.*

2. Run cold water over the end of the thermometer which has been in the sterilizing fluid to prevent stinging of the pupil's lips and tongue by the alcohol.

3. Examine the mercury in the thermometer to be sure its reading point is below normal (98.6 degrees Fahrenheit).

4. Place the tip of the thermometer beneath the side of the patient's tongue; have him close his lips. *Caution him not to bite the thermometer.* Leave the thermometer in this position at least *five minutes*, regardless of directions which come with the instrument.

5. Remove the thermometer and read it. Do not hold it by the bulb-end. Clinical thermometers read exactly the same as ordinary thermometers. The only trick is to rotate the barrel of the thermometer (as it is held horizontally, at the level of the eye) until the mercury column is seen as a silvery line and the numbered lines appear to lie over the mercury line. Read in degrees Fahrenheit or Centigrade, depending

on the system used. Normal is 98.4 or 98.6 degrees Fahrenheit. In children, anything may be considered normal up to 99 degrees Fahrenheit and not below 98.4 Fahrenheit.

6. Replace the thermometer in the sterilizing fluid, after running cold water over it to cleanse it. Do not use it again for twenty-four hours. Be careful not to rinse in hot water, which would injure the thermometer.

CHAPTER FIVE

WHAT TO DO WITH A CHILD WHO SHOWS SIGNS OF ILL HEALTH

DURING the inspection, any child showing signs of not being in normal health is excluded at once from the room without further examination by the teacher. A note is written or a card is filled out, containing his name, room number, and cause for exclusion. With this report the child is sent immediately to some selected place in the school for further observation by some definite person. Following is a form used for this purpose:

Name of Pupil.....	Room
Referred because of.....	
Date	Teacher's Name.....
Disposal of Case.....	
Date	Examiner's Name.....

The child presents himself with the note or card to the person whose duty it is to pass on the case in order to determine whether

1. The child shall be excluded from school.
2. The child may remain, but may take part in certain school exercises only, perhaps omitting certain class

activities that day, such as physical training. Sometimes a child is allowed to remain at school as a "visitor."

3. The child is apparently well, and may remain at school and do full work.

The persons designated for the more careful examination, if they are available, should be persons having more skill and experience than the classroom teacher, or at least more time for examination of the case. They should certainly be the *most skilled* persons available and may be

The principal.

Trained but non-medical examiners,
such as nurses.

The school physician (in rare instances).

If exclusion is necessary, the parents ought to be informed of the fact and, if possible, should come or send to the school for the child, especially for younger pupils. Whether or not the school shall notify the Board of Health regarding any contagious-disease cases discovered, will depend on the regulations of the health authorities. Boards of Health frequently do not encourage such notification unless a physician has made a diagnosis of the case. They then depend on physicians for required reports.

In cases of contagious disease where other children in the family attend school, provision must be made for them according to adopted standards. (Examples are given on pages 46-52.)

Where a sick child has exposed a classroom to contagious disease, some previously adopted policy should be carried out for the whole room. This may mean

quarantining the room or closing it, for a suitable number of days (depending on the disease).

Families must be encouraged to report at once to the school any absences due to sickness, and to keep slightly ill children at home until the disease is certainly diagnosed as non-communicable.

CHAPTER SIX

WHAT TO DO IN A CLASSROOM EXPOSED TO A CONTAGIOUS DISEASE

WHEN it is discovered that one or more of the children in a class have been exposed to a contagious disease, immediate action must be taken.

1. *Immunity.* By means of the Classroom Immunity Chart (page 15), determine how many children in the class are non-immune and are therefore likely to take that particular disease.

2. *Obligations of parents.* Notify all parents of children in the room (usually by mimeographed letter) that an exposure has taken place, and request them to watch carefully for the signs described on page 22 of this book. Parents should notify the school at once if any child shows signs of illness, even before a definite diagnosis is made, and should notify the school again when diagnosis is made. Their physicians, or the householders themselves, are expected to notify the Board of Health if the disease is contagious or reportable. Parents should provide any available means of special protection against the disease.

3. *Policy of closing the room.* Usually it is unwise and undesirable to close a room or a whole *public school* in cases of contagious disease, since the school, with its well-organized methods of control,

- a. Offers a better protection than the child obtains elsewhere.
- b. By checking absentees, assists in discovering hidden cases (the real cause of epidemics).

In a *private school*, the policy of closing or keeping open depends on

- a. The desires of the parents.
- b. The degree to which the school is able to protect its pupils, as compared with the home.
- c. The likelihood of further cases occurring.
- d. What the disease is. Very strict measures are desirable with smallpox, diphtheria, and scarlet fever.

In no case should a child be required to attend any school against his parents' wishes when his class has been exposed to a contagious disease or during an epidemic.

4. *Quarantine plan.* If a room is not closed, it ought to be placed under the Individual Room Quarantine Plan.¹ The room is then conducted as a separate school within a school. It is possible, by this plan, to permit the exposed class to attend school without danger to other pupils.

INDIVIDUAL ROOM QUARANTINE PLAN

I. The children

- a. Come to school a few minutes later than pupils of other rooms.
- b. Leave five or ten minutes earlier than the others.
- c. Have their own recess periods, separate from the rest of the school.
- d. Attend no assemblies or other exercises in which the rest of the school participates.
- e. Use only their own classroom. In junior high schools it is permissible for teachers to meet such a class in its own room, and then go to other rooms to teach other classes. This, of course, will cause the teacher some inconvenience and will sometimes be impossible.

¹ Rowell, *American Journal of Public Health*, April, 1923.

II. Use of the regular toilets is permissible except at recess time or at other times when groups of the other pupils go to the toilet rooms.

III. The teacher is expected to make a very careful health survey of the room each morning.

IV. Particularly in epidemics, or where the disease is diphtheria, scarlet fever, or smallpox, a further daily inspection of each pupil ought to be made by the school nurse or, if possible, by the school physician.

There is no more apprehension or undesirable interest in the situation in Individual Room Quarantine than there is in any room which has been exposed to contagious disease and is being carefully watched, or when a room is closed.

The above plan usually has to be modified somewhat and certain concessions made to conditions existing in the school.

5. *Fumigation of the room.* Health authorities agree that fumigation of a classroom is unnecessary. This work, if done, should be performed by representatives of the Board of Health, and they would do it largely for the mental or moral effects on the community. The present-day citizen, however, is being educated in community hygiene, and this excuse will not long be valid.

The thing which should be done is to *air the room thoroughly and allow as much sunlight as possible to enter*. In extreme cases, close the room to pupils and teachers for the rest of the day and leave the windows open all night, if this is practicable. If desired, the floor, walls, and desks may be thoroughly cleaned with soap and water. No disinfectant is necessary.

In New York City, in cases of smallpox, fumigation of the patient's home is required. Sulphur is used — three pounds for every 1000 cubic feet of air space of infected premises.

6. *Books.* Books have been considered important agents in the transmission of many diseases, such as tuberculosis. Much of this theory has been disproved. Except in cases of itch (scabies), smallpox, diphtheria, scarlet fever, ringworm, and impetigo, a thorough *sunning* of the books should meet all theoretical needs. In the diseases mentioned, it is probably wise to burn the books.

7. *Release of the room from quarantine.* Quarantine of a room is for the same number of days as the incubation period for the disease on account of which the room is quarantined. At the end of such a period the room is released from quarantine, provided no further exposure has occurred.

Individuals who have been exposed to contagious disease should watch with the greatest care all details of personal hygiene. They should —

1. Adopt at once all possible approved preventive measures, such as vaccination. The earlier this is done, the better the chance for escaping the disease.

2. Observe carefully all rules for personal hygiene. Avoid constipation; drink at least six glasses of water a day; keep out of doors as much as possible; secure more sleep than usual; exercise regularly but do not overdo; eat simple foods.

3. On the slightest feeling of illness, report to a physician.

CHAPTER SEVEN

PLAN FOR READMISSION OF PUPILS

PUPILS may and should be excluded from school by non-medical persons if they are trained and authorized to do this work; but after any absence due to illness that is more serious and extended than an indisposition of one or two days, no pupil should be readmitted to school without a physician's certificate. For uniformity, it is desirable that such certificate or permit for readmission should be issued by the school doctor, by the health officer, or by a school nurse directly representing the school doctor. Nevertheless, in most communities for a long time to come, such medical certificates for readmission of pupils must of necessity be accepted from the family doctor. The health regulations of the school should be made clear and complete, so that certificates from family physicians in the community may be as nearly uniform as possible.

In the case of pupils excluded for suspicious signs which have cleared up within twenty-four hours (and which therefore represent temporary, non-contagious ailments), the requirement of a physician's certificate may be waived, provided the child appears to the admitting officer to be in good health.

THE PARENTS' DUTIES IN READMISSION

1. Pupils should not be sent to school until readmission may reasonably be expected, in accordance with the regulations.

2. If possible, especially with elementary school children, the parent or some other responsible person

familiar with the case should accompany the child to the school. This makes accurate information about the case easily available, and if the child is not readmitted, there is someone who can accompany him home. If a parent or someone representing the parents cannot come with the child for readmission, then

- a. A note may be sent from the home with the child, or
 - b. The parent may explain the situation to the principal by telephone.
3. All required certificates of health should be brought with, or by, the child.
 - a. In cases of smallpox, scarlet fever, and diphtheria, no child can usually be readmitted to school without the written permission of the Board of Health. This should be obtained before sending the child to school for readmission, and should be brought with, or by, the child.
 - b. If a physician has seen the case and made a diagnosis, a certificate is desirable from him to the effect that the child
 - (1) Has no contagious disease, or is no longer in the contagious stage of a communicable disease.
 - (2) May (or may not) participate fully in the school program; and if not, how he shall be limited.
 - (3) Must be safeguarded by the school against any special dangers to his health; what these dangers are, if any; and for how long, approximately, he must be safeguarded.

PHYSICIAN'S CERTIFICATE

Date

THIS CERTIFIES that has been under my professional care since because of First symptoms occurred (apparently) on I consider her } no longer likely to transmit the disease to others and believe him } she } can safely resume the regular school program, with the he } following exceptions: —
.....

Signed M.D.

4. The parents should find out the regulations of the school regarding readmission and fulfill them in detail.
5. The parents should accept whatever ruling is made on the case, recognizing that while the examiner is anxious to readmit the child to school, he must be overcautious in order to keep out the disease.

THE SCHOOL'S DUTIES IN READMISSION

1. Some well-trained person, preferably a physician or a nurse, should pass on every child who has been absent because of illness.
2. The office (usually the health office or the principal's room) should be open and the examiner ready for duty at least fifteen minutes before the opening hour of school, in order that the child may not be late for his work. This usually means that the office should be open about half-past eight.

3. There must be enough examiners to handle applicants for readmission rapidly. There is always the possibility of disease transmission from some child sent to school too soon, before the infectious period of a disease has passed. This situation at present is unavoidable, but with proper precautions it can be minimized.

4. Each child should be examined carefully and his certificates studied. If he may be readmitted, he should be given a written slip so stating, to be carried by him to his teacher. (See Standards for Exclusion and Quarantine, page 40.)

5. If he may be readmitted, but may participate only in a limited program, whether at the request of the family or on the advice of the family physician or the school examiner, this fact should be noted on his admission slip and the information also conveyed to whatever persons in the school ought to know this, such as the classroom teachers and teachers of physical education.

6. Children not readmitted after examination should be required to leave the school premises as soon as possible. They should be kept away from well children. Usually parents must be notified if this situation exists, unless a parent has accompanied such a pupil to school.

CHAPTER EIGHT

STANDARDS FOR EXCLUSION AND QUARANTINE

SEVERAL states, cities, and schools (or groups of schools) have adopted satisfactory standards for exclusion, quarantine, and isolation of persons who either have contagious diseases or have been exposed to them. All such standards are based on the respective incubation periods and characteristics of the various diseases. On pages 42-45 is printed the table used by the University of Chicago (School of Education, University High School, and University Elementary School). Note the column marked *Principal Signs and Symptoms*.

The code¹ adopted for New York State (March 11, 1925) contains the following specifications as to the minimum period of isolation.

MINIMUM PERIOD OF ISOLATION

Chickenpox, until twelve days after the appearance of the eruption and until the crusts have fallen and the scars are completely healed.

Diphtheria (membranous croup), until two successive cultures taken from the nose and throat at intervals of not less than twenty-four hours have been examined and found negative in a laboratory approved for this purpose by the state commissioner of health, the first of such cultures being taken not less than nine days from the day of the onset of the disease; except that after five weeks from the date of taking the first release culture, the health officer in his discretion may declare the case to be a diphtheria carrier and subject to the special rules and regulations of the State Department of Health.

¹ Meeting of the Public Health Council in New York City, March 11, 1925. Chapter II, "Communicable Diseases," Regulation 36, "Minimum Period of Isolation."

Measles, until at least five days after the appearance of the rash.

Meningitis, epidemic cerebro-spinal, until two weeks after the temperature has become normal or until three successive cultures, obtained from the naso-pharynx at intervals of not less than five days, have been examined in a laboratory approved for this purpose by the state commissioner of health (shall be) and found free of meningococci.

Mumps, until two weeks after the appearance of the disease and one week after the disappearance of the swelling.

Poliomyelitis, acute anterior (infantile paralysis), until three weeks from the day of the onset of the disease.

Scarlet fever, until thirty days after the development of the disease and until all discharges from the nose, ears, and throat, or suppurating glands have ceased.

Smallpox, until fourteen days after the development of the disease and until scabs have all separated and the scars completely healed.

Typhoid, **paratyphoid fever**, or **bacillary dysentery**, if the patient's occupation involves the handling of milk, dairy products, or other food, until all signs of the disease or all secondary or complicating infections incited by the agents of these diseases have disappeared, and until two successive specimens of the intestinal discharges and urine of the patient have been taken at an interval of not less than seven days and have been examined in a laboratory approved for this purpose by the state commissioner of health and found to be free from dysentery, typhoid, or paratyphoid bacilli.

Whooping cough, until eight weeks after the development of the disease or until one week after the last characteristic cough.

The following rules are in force in New York City :

Every school teacher or pupil who is a member of a family in which a case of diphtheria, scarlet fever, cerebro-spinal meningitis, or acute poliomyelitis has occurred must be excluded from school until readmitted by the Department of Health. Children and teachers with measles are excluded from school, but are permitted to return five days after the appearance of rash, provided the rash and all catarrhal discharges have disappeared. Those who have had measles may continue at school. Those who have not had measles are excluded from school until fourteen days after the date of last exposure. Private physicians are authorized by the Department of Health to readmit children or teachers who have suffered from or have been exposed to measles. In cases of German

COMMUNICABLE DISEASES

DISEASE	PRINCIPAL SIGNS AND SYMPTOMS	EXCLUSION FROM SCHOOL				DURATION Patient	
		Other child of household		Other school child exposed			
		Non- Im- munes ¹	Im- munes ¹	Non- Im- munes	Im- munes		
CHICKEN POX	Sometimes begins with feverishness, but is usually very mild and without sign of fever. Rash appears on 2d day as small pimples, which in about a day become filled with clear fluid. This fluid then becomes matter, and then the spot dries up and the crust falls off. May have successive crops of rash until 10th day.	Yes	No	Yes	No	Until all scales are shed and disinfection of person; at least 10 days to 2 weeks	
DIPHTHERIA	Onset insidious, may be rapid or gradual. Typically sore throat, great weakness and swelling of lymph nodes in the neck, about the angle of the jaw. The back of the throat, tonsils, or palate may show patches like pieces of grayish-white kid. The most pronounced symptoms are great debility and lassitude, and there may be little else noticeable. There may be hardly any symptoms at all.	Yes	Yes	Yes	Yes	Until recovery and two cultures from throat and nose containing no diphtheria bacilli. Disinfection of person	
MEASLES	Begins like cold in the head, with feverishness, running nose, inflamed and watery eyes, and sneezing; small crescentic groups of mulberry-tinted spots appear about the third day; rash first seen on forehead and face. The rash varies with heat; may almost disappear if the air is cold, and come out again with warmth.	Yes	No	Yes	No	Until recovery and disinfection of person; 14 days from onset	
MEASLES (GERMAN)	Illness usually slight. Onset sudden. Lymph nodes back of ears enlarged. Rash often first thing noticed; no cold in head. Usually feverishness and sore throat, and the eyes may be inflamed. Rash something between measles and scarlet fever; variable.	Yes	No	Yes	No	Until recovery and disinfection of person; at least 10 days	
MUMPS	Onset may be sudden, beginning with sickness and fever, and pain about the angle of the jaw. The glands become swollen and tender, and the jaws stiff, and the saliva sticky.	Yes	No	Yes	No	2 weeks, and after disinfection of person	

¹ Immunes are those who have had the diseases.

OF EXCLUSION FROM DATE OF ONSET		REMARKS
Other child of family	Child exposed at school	
Exclude until 22d day after child last saw patient.	Exclude from school during 11th to 22d day after child last saw patient.	When child returns, examine head for overlooked spots. All spots should have disappeared before child returns. A mild disease, and seldom any after-effects.
Until two cultures, 24 hours apart, from nose and throat are reported negative. Those showing diphtheria bacilli should be immunized.		Very dangerous, both during attack and from after-effects. When diphtheria occurs in a school all children suffering from sore throat should be excluded. There is a great variation of type, and mild cases are often not recognized, but are as infectious as severe cases. There is no immunity from further attacks.
Exclude until 18th day after child last saw patient.	Exclude from school during 5th to 18th day after child last saw patient.	After-effects often severe. Period of greatest risk of infection first 3 or 4 days, before the rash appears. Great variation in type of disease. Dangerous in children under 2 years of age.
Exclude until 21st day after child last saw patient.		After-effects slight. Regulations strict, because frequently confused with scarlet fever.
Exclude for 3 weeks after child last saw patient.	Exclude from 15th to 22d day after child last saw patient	Seldom leaves after-effects. Very infectious. Occasional inflammation of genital organ — male and female.

COMMUNICABLE DISEASES

DISEASE	PRINCIPAL SIGNS AND SYMPTOMS	EXCLUSION FROM SCHOOL				DURATION Patient	
		Other child of household		Other school child exposed			
		Non- Im-	Im- munes	Non- Im-	Im- munes		
SCARLET FEVER	The onset is usually sudden, with headache, languor, feverishness, sore throat, and often vomiting. Usually within 24 hours the rash appears and is finely spotted, evenly diffused, and bright red. The rash is seen first on the neck and upper part of chest, and lasts 3 to 10 days, when it fades and the skin peels in scales, flakes, or even large pieces. The tongue becomes whitish, with bright red spots. The eyes are not watery or congested.	Yes	No	Yes	No	At least 30 days and until discharges have ceased and disinfection of person	
SMALLPOX	The illness is usually well marked and the onset rather sudden, with feverishness, severe backache, and sickness. About third day a red rash of shotlike pimples, felt below the skin, and seen first about the face and wrists; spots develop 2 days later, then form little blisters, and after 2 days more become yellowish and filled with matter. Scabs then form which fall off about the 14th day.	Yes	Yes	Yes	No	Recovery and disinfection of person	
SORE THROAT, ACUTE SEPTIC	Begins with sore throat and weakness. Throat diffusely reddened and may show patches like diphtheria.	No	No	No	No	Until recovery	
WHOOPING COUGH	Begins like cold in the head, with bronchitis and sore throat, and a cough which is worse at night. Symptoms may at first be very mild. Characteristic whooping cough develops in about 14 days, and the spasm of coughing often ends with vomiting.	Yes	No	Yes	No	5 weeks from date of first whoop; disinfection of person	

DISINFECTION. The cleansing and disinfection of the person includes washing the entire gargling the throat, and douching and spraying the nose with an antiseptic solution; and, brushing of the outer garment out of doors before these are put on again).

Publisher's Note. The foregoing table of Communicable Diseases among Children has, verity of Chicago. These necessary modifications, however, in no way change the meaning of

AMONG CHILDREN (*Continued*)

OF EXCLUSION FROM DATE OF ONSET		REMARKS
Other child of family	Child exposed at school	
Exclude for 7 days from time child last saw patient.		Dangerous both during attack and from after-effects. Great variation in type of disease. Slight attacks as infectious as severe ones. Many mild cases not diagnosed and many concealed. The peeling may last 6 to 8 weeks. A second attack is rare. When scarlet fever occurs in a school, all cases of sore throat should be sent home. More fatal in children under 10 years.
Exclude until 22d day after child last saw patient, or 7 days after successful vaccination and disinfection of person.	Exclude 22 days unless successfully vaccinated within 1 year, in which case child may return at once.	Peculiarly infectious. When smallpox occurs in connection with a school or with any of the children's homes, endeavor should be made to have all persons vaccinated. Cases of modified smallpox in vaccinated persons may be, and often are, so slight as to escape detection. Fact of existence of disease may be concealed. Mild or modified smallpox as infectious as severe type.
		Often leads to serious results, affections of heart, kidneys, etc. Very likely to cause epidemics if milk or other raw foods are contaminated.
Exclude for 18 days provided no cough develops meantime.		After-effects often very severe and disease causes great debility. Relapses are likely to occur; second attack rare. Specially infectious for first week or two. If a child vomits after a paroxysm of coughing, it is probably suffering from whooping cough. Great variation in type of disease. Often fatal in young children.

body and the hair with soap and water; thorough brushing of the teeth; rinsing the mouth; finally, a complete change of clothing (or a change of underwear and a thorough shaking and

for purposes of printing, been slightly changed from the form in which it is issued by the Uni-
the original.

measles, chickenpox, whooping cough, and mumps, only the sick child is to be excluded. In cases of smallpox, all teachers and pupils residing in the building must be excluded.

School children exposed to an infectious disease will be given a special certificate readmitting them when regulations of the Department of Health are complied with. Applications should be made at the Branch Office of the district in which the pupil resides.

A selected group of private schools in New York City, including the Horace Mann Schools, the Lincoln School, Miss Chapin's School, the Ethical Culture School, the Brearley School, and others, have adopted regulations based on the consensus of opinions of recognized specialists in children's diseases. These rules have been approved by the New York City authorities. Outside New York City, these regulations might need to be changed to make them conform to the regulations of the local health authorities, although they would usually exceed the requirements of the local authorities. Experience has demonstrated the success of these rules as satisfactory with the types of parents and homes usually represented in private schools.

The record card has on its reverse side a form for medical certificate. These cards are three by five inches in size and are of different colors. All the record cards end with this paragraph:

NOTE. By careful disinfection is meant a change of clothing after washing the entire body and hair with soap and water; brushing the teeth; and rinsing the mouth, gargling the throat, and douching or spraying the nose with an antiseptic solution.

WHOOPING COUGH (PERTUSSIS) (Pale blue card)

- I. After an attack of this disease pupils may not return to school for six weeks and until one week after the last characteristic cough, and after careful disinfection.

II. 1. a. *Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the contagious stage of the case, nor until fourteen days after the past exposure to it during this stage, which is considered at an end three weeks after onset of the whoop; that is, providing the child has not developed a cough in the meantime.*

b. *Pupils of the same family who have had this disease, if they remain at home and have no cough, may return to school immediately, provided the case is properly quarantined, and after careful disinfection.*

2. a. *Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may return to school after fourteen days, if no cough or catarrhal symptoms have developed and they have been carefully disinfected.*

b. *Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.*

III. a. *Children exposed at school or elsewhere who have not had this disease will be excluded from school for fourteen days after exposure, when they may return, provided no cough has developed.*

b. *Children exposed at school or elsewhere who have had this disease may return to school immediately.*

CHICKEN POX (VARICELLA)

(Yellow card)

After an attack of this disease pupils may return to school when crusts have fallen off and scabs are healed.

No restrictions are placed on other members of the family, except that children exposed must be carefully inspected daily before going to school, for spots on the body or on mucous membrane of the throat.

The older and more conservative form is as follows:

I. After an attack of this disease pupils may not return to school until the crusts have fallen and the scars are completely healed, and until after careful disinfection. This is usually two weeks after the appearance of the eruption.

II. 1. a. *Pupils of the same family who have not had this disease, if they remain at home, may not return to school*

· during the existence of the case, nor until the twenty-second day after the last exposure, and after careful disinfection.

b. Pupils of the same family who have had this disease, if they remain at home and the case is properly isolated, may return to school immediately after careful disinfection.

2. a. Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may after careful disinfection return to school on the third day;¹ they will then be excluded from the eleventh until the twenty-second day.

b. Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.

III. a. Children exposed outside of the home who have not had this disease may remain at school for ten days after exposure; they will then be excluded from the eleventh until the twenty-second day.

b. Children exposed outside of the home who have had this disease may return to school immediately.

DIPHTHERIA AND MEMBRANOUS CROUP (White card)

Susceptibility to diphtheria can be scientifically determined by the Schick Test, which is simple, painless, and without any danger.

Susceptible individuals can be rendered immune in the great majority of cases by the use of the so-called toxin-antitoxin injections, which are best given in three single injections, a week apart.

I. After an attack of this disease no pupil may return to school until cultures from the throat and nose on two successive days have proved the absence of the infectious bacteria.

II. *1. Pupils of the same family, whether they have or have not had this disease, if they remain at home, may not return to school during the existence of the case. At its conclusion pupils may return if immunized or Schick negative, after cultures from the nose and throat on the two preceding days have been proved negative. If not immunized or are Schick positive, they may return on the fifth day, provided examination of cultures from nose and throat on the two preceding days have proved negative.*

¹ See page 52 of this book for an explanation of this three-day exclusion.

2. *Pupils of the same family, whether they have or have not had the disease, if at once withdrawn from the house where the disease exists, may return to school if immunized or Schick negative, after cultures from the nose and throat on the two preceding days have proved negative. If not immunized or Schick positive, on the fifth day, provided cultures from the nose and throat on the two preceding days have proved negative.*

III. *Children exposed at school or elsewhere, whether they have or have not had the disease, if immunized or Schick negative, may return to school if cultures from the nose and throat on the two preceding days have proved negative. If not immunized or Schick positive, on the fifth day, if cultures from the nose and throat on two preceding days have proved negative.*

Careful disinfection will be required before any pupil will be permitted to return to school.

GERMAN MEASLES (RUBELLA)

(Pale green card)

I. After an attack of this disease, pupils may return to school on the eighth day after the appearance of the eruption, provided desquamation has entirely ceased, and after careful disinfection.

II. 1. a. *Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the existence of the case, nor until the twenty-second day after the last exposure, and after careful disinfection.*

b. *Pupils of the same family who have had this disease, if they remain at home and the case is carefully quarantined, may return to school immediately after careful disinfection.*

2. a. *Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may after careful disinfection return to school on the third day; they will then be excluded from the tenth until the twenty-second day.*

b. *Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school, after careful disinfection.*

III. a. *Children exposed at school or elsewhere who have not had this disease may remain at school for nine days after*

Prevention and Control of Diseases

APR - 2 1925

exposure; they will then be excluded from the tenth until the twenty-second day.

b. Children exposed at school or elsewhere who have had this disease may return to school immediately.

INFANTILE PARALYSIS (POLIOMYELITIS) (Brown card)

I. After an attack of this disease, pupils may return to school in six weeks after the initial symptoms.

II. *1. a. Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the existence of the disease nor until two weeks after the last exposure and after careful disinfection.*

b. Pupils of the same family who have had this disease, if they remain at home, will also be excluded from school during the existence of the case, and until two weeks after the last exposure and after careful disinfection.

2. a. Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may after careful disinfection return to school on the fifteenth day.

b. Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school on the fifteenth day after careful disinfection.

III. *Children exposed at school will be excluded from school for two weeks.*

MEASLES (RUBEOLA) (Pink card)

I. After an attack of this disease, no pupil may return to school until fourteen days after the appearance of the rash, and after the complete disappearance of the catarrhal symptoms and after careful disinfection.

II. *1. a. Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the contagious stage of the case, nor until the fifteenth day after the last exposure to it during this stage, which is to be considered at an end one week after the appearance of the rash, provided all catarrhal discharges are over. There should be careful disinfection.*

b. Pupils of the same family who have had this disease, if they remain at home and the case is properly isolated, may return to school immediately after careful disinfection.

2. a. *Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may, after careful disinfection, return to school on the fifteenth day.*

b. *Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.*

III. a. *Children exposed at school or elsewhere who have not had this disease may remain at school for seven days after exposure; they will then be excluded from the eighth until the fifteenth day.*

b. *Children exposed at school or elsewhere who have had this disease may return to school immediately.*

MUMPS (INFECTIONOUS PAROTITIS)

(Gray card)

I. After an attack of this disease, pupils may return to school in one week after the disappearance of the swelling, and after careful disinfection; the contagious stage is considered over with the disappearance of the swelling.

II. 1. a. *Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the existence of the case, nor until the twenty-second day after the last exposure to it while the swelling was present, and after careful disinfection.*

b. *Pupils of the same family who have had this disease, if they remain at home, may return to school immediately provided the case is carefully quarantined, and after careful disinfection.*

2. a. *Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may, after careful disinfection, return to school on the third day and remain until the fifteenth day; they will then be excluded until the twenty-second day after exposure.*

b. *Pupils of the same family who have had the disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.*

III. a. *Children exposed at school or elsewhere who have not had this disease may remain at school for fourteen days; they will then be excluded from the fifteenth until the twenty-second day after exposure.*

b. *Children exposed at school or elsewhere who have had this disease may return to school immediately.*

SCARLET FEVER (SCARLATINA)

(Scarlet card)

I. After an attack of this disease, no pupil may return to school until five weeks after the first manifestation of the disease, whether mild or severe; and until desquamation is complete; and until all catarrhal symptoms or purulent discharges shall have ceased; and until after careful disinfection.

II. 1. a. *Pupils of the same family who have not had this disease, if they remain at home, may not return to school during the existence of the case, nor until the eighth day after the last exposure, and after careful disinfection.*

b. *Pupils of the same family who have had this disease, if they remain at home, may not return to school during the existence of the disease, nor until after careful disinfection.*

2. a. *Pupils of the same family who have not had this disease, if at once withdrawn from the home in which the disease exists, may return to school on the eighth day.*

b. *Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.*

III. a. *Children exposed at school or elsewhere who have not had this disease may return to school on the eighth day.*

b. *Children exposed at school or elsewhere who have had this disease may return to school immediately.*

The private school rules contain a unique provision of "exclusion for three days" (see page 48). The explanation is as follows:

If exposure to contagious disease occurs at one definitely known time, from a definitely known case, all children exposed under such conditions who are likely to come down with the disease will develop it within three days of the first case. For this reason, it is customary to exclude for three days children of a family where a contagious disease occurs, unless these children are known *not* to have been in contact with the child that had the disease.

Any danger of disease developing after this three-day period will usually come in the latter half of the incubation period of the disease. It is therefore safe to allow a child in a family where there is a carefully isolated case of contagious disease to return to school for approximately the *first half* of the incubation period, except the first

three days (except as stated especially in the notes on each disease). Thus a maximum of school attendance is saved for the exposed child, without danger to other pupils.

In interpreting any of these sets of regulations, the most difficult application is in the case of children who have had single exposures of varying severity outside the home or classroom. Such situations have to be handled on the basis of degree of danger of exposure. These questions should be asked :

1. What was the stage of the disease to which the child was exposed?
2. How long was the period of contact with the case?
3. How close was the contact with the case? Was it a passing of the sick child on the street, or kissing him, or wrestling with him, or sleeping with him, or using his handkerchief, or some other contact?

In general, *strictness is the wise policy* and all regulations should be met fully in letter and spirit, if there is any doubt about what to do.

As yet, the use of the special protective measures against diphtheria and scarlet fever are not sufficiently universal in use to make possible special concessions to tested or protected pupils, in matters of school attendance. In the future, it will be possible (having proved a child is not a "carrier") to permit immune children to attend school without interruption or restriction, *provided the sick child is properly isolated in the home or elsewhere, so that there can be no possible way of carrying the disease.*

CHAPTER NINE

CLASSROOM COMMUNICABLE DISEASE REPORTS

IT is very helpful to keep a Communicable Disease Report because it will

1. Furnish a record of the number of cases of communicable diseases occurring in a classroom during the school year.
2. Record and classify cases which have arisen from
 - a. Intraschool contacts.
 - b. Extraschool exposures.
 - c. Unknown sources.
3. Record the number of days of absence caused by such diseases.

Such records may be very enlightening to some teachers, as well as to any members of the community who need to be convinced of the need for disease control in the schools. Such records show also where most effort is needed. In order to wage a successful war, the lay of the land and the strength of the enemy must be known and taken into consideration. Records are necessary for the intelligent study of any situation.

The form recommended is a card five inches by eight inches, a standard filing size. One side (see pages 55 and 56)¹ is for a record of contagious diseases, such as diphtheria. The reverse side is for a record of colds and other diseases of the respiratory tracts and for certain infections which may be communicated to other pupils.

¹ Permission to use this form in any school or system of schools should be obtained from the authors.

WOOD-ROWELL COMMUNICABLE DISEASE REPORT

YEAR 19

SCHOOL

ROOM

GRADE

TEACHER

DISEASE	S I P T.	O C T.	N O V.	D E C.	J A N.	F E B.	M A R.	A P R.	M A Y	J U N E	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	TOTAL
DIPHTHERIA	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?
CHICKEN POX																
MEASLES																
MUMPS																
SCARLET FEVER																
WHEEZING COUGH																

SOURCE CODE : S = IN SCHOOL; O = OUTSIDE OF SCHOOL; ? = DOUBTFUL

DISEASE	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	TOTAL
	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?	S 0 ?
IMPETIGO											
ITCH											
LICE (HEAD)											
PINK EYE											
POISON IVY											
RING- WORM											
SPECIAL											
RESPIRA- TORY DISEASES											

TOTAL ATTENDANCE
POSSIBLE (DAYS) _____
TOTAL ABSENCES _____
% ABSENCE (DAYS)
from
CONTAGIOS.
RESPIRDIS.

The following plan is suggested :

1. When a case of any disease affecting the pupil is reported to the school, make a single mark in the proper month and source column. Devise a method for recording five or more cases, such as ~~NNI~~.

2. To keep a record of the number of days of absences, make the entry when a pupil returns to school, recording in the proper month and source column the number of school days he has been absent. Record *school days only*. Do not include holidays or week-ends.

3. At the end of the semester, term, or year, the totals are easily found by adding the numbers in the different columns. This can be done in five minutes, and time is thus saved when time is needed most.

Records should be made in the Month-Source columns as follows :

S — record in this column cases where the disease is known to have been caught *in school*. Few cases should arise from this source.

O — record in this column cases where the disease is known to have been contracted from a source *outside* the school, such as at a children's party.

? — record in this column cases where the source of contagion is *not known*.

In order to complete the report :

1. Determine the possible total absences. This is the same as the possible total attendance; in other words, multiply the number of school days in the term or school year by the number of pupils present. Where pupils have been withdrawn from the school before the term or year is completed, consider their possible total absences as the number of days which they might have been present up to the time of withdrawal.

2. Determine the total number of days of actual absences from all causes. These will probably be subdivided into

- a. Absences due to other causes than illness.
- b. Absences due to illness. These may be further subdivided in accordance with the wishes of the school authorities. Groupings will vary in different localities; e.g., chickenpox, measles, and similar diseases may be listed separately or may be grouped together as contagious diseases. The subdivisions listed on the report form on page 55 are probably as satisfactory as any.

3. Determine the percentage of total absences as compared with the possible total absences by the following formula :

$$\frac{\text{Total absences}}{\text{Possible total absences}} = \text{percentage}$$

4. Determine the percentage of total absences due to causes attributable to disease. The formula is :

$$\frac{\text{Absences for causes attributable to disease}}{\text{Total absences}} = \text{percentage}$$

5. Determine the percentage of total absences due to any special causes. The formula is :

$$\frac{\text{Absences from special cause}}{\text{Total absences}} = \text{percentage}$$

6. Determine the percentage of absences from causes attributable to disease as compared with any special

causes due to health (such as respiratory diseases). The formula is :

$$\frac{\text{Absences from special cause}}{\text{Absences attributable to all diseases}} = \text{percentage}$$

In a recent study of private schools, respiratory diseases caused from thirty-five to one hundred per cent of all absences for diseases.

From these formulas, it is possible to make such determinations as are desired.

In general, parents of children in private schools are more likely to keep their children out of school occasionally than are parents of children in public schools. For this reason the number and percentage of absences from causes not due to health will be larger in private than in public schools. On the other hand, private schools make very excellent records in regard to percentage of days lost through illness, particularly through diseases over which the school can exercise some control.

Graphic representations of the findings in these reports of absences are very useful in demonstrating to parents what can be done to improve the attendance record. The two best and most common methods are :

1. The temperature chart method, where a line indicates progress. This can be used to show the effects of a single cause, or of all causes, by months, weeks, or days. Either classes or causes may be compared by this graph.

2. The bar method, where broad bars of different lengths indicate the absences from different causes. By this graph, also, classes or causes may be compared for definite periods, such as months, terms, or years.

Procedures for the *health control of school employees* should be based on the same standards as those for the

pupils. All school employees come into actual or potential contact with school children, the teacher spending the longest time with the pupils.

All school employees, but teachers especially, ought to be protected in every practical way against contagious disease, by all known methods of securing artificial immunity. The degree of immunity which is conferred by age is not enough. School employees cannot avoid exposure to these diseases; and while less likely to take them than the pupils, they are nevertheless in distinct danger. This fact should be recognized by teachers and by those who supervise the teachers.

CHAPTER TEN

HOW COMMUNICABLE DISEASES ARE SPREAD

THERE are certain general methods of dissemination of communicable diseases. Summarized they are:

1. Through the air. When an individual with certain contagious diseases coughs or sneezes, infectious material from the air passages of nose or throat may be scattered about to a distance of several feet from the sick person. This distance is variously estimated as from ten to fifty feet.
2. Through contact:
 - a. Direct, as by kissing the individual or by touching him otherwise.
 - b. Indirect, as through secondary objects. Examples are food and food containers, water and drinking cups, towels, pencils, books, toys, dust, dirty linen (handkerchiefs or bed clothing), door handles, "pulls" or chains of toilets, faucets, hanging straps on trolley cars.
3. Through carriers (explained on page 111). Examples are typhoid and diphtheria carriers.
4. Through animals or insects who act as "host" or as means of transportation for the germ. Examples are the dissemination of typhoid fever, malaria, and yellow fever by flies, mosquitoes, fleas, bedbugs, and lice. The mosquito is the means by which malaria and yellow fever are spread. Control of yellow fever necessitated the elimination of the mosquito in the yellow fever zones.
5. Through soil, as lockjaw (tetanus) and hookworm.

6. Carelessness, selfishness, and thoughtlessness are three important contributing causes of the spread of contagious disease. These attitudes are shown by attempts on the part of families to hide cases; by requests (often demands) upon the family physician that he break the law and not report a case to the Board of Health; by failure to observe quarantine carefully; by holding parties for children during epidemics; by allowing sick children to associate freely with well children. Time was, and not long ago, when such behavior was due to ignorance; but that time is rapidly passing.

CHAPTER ELEVEN

IMPORTANT FACTS REGARDING CONTAGIOUS DISEASES

CERTAIN facts regarding contagious diseases¹ should be familiar to every examiner who *readmits pupils*.

CHICKENPOX

This is one of the least serious of the children's diseases and is rarely followed by harmful results. The greatest danger is from possible confusion with smallpox. Make sure that the child said to have had chickenpox has a *good vaccination scar*, dating within five years. One can then be reasonably sure that the child did not have smallpox.

Infectious agent or cause of the disease. Unknown.

Source of infection. The infectious agent is presumably present in the lesions of the skin and of the mucous membranes; the latter, appearing early and rupturing as soon as they appear, render the disease communicable early, before the rash (exanthem) is in evidence.

Mode of transmission. Directly from person to person; indirectly through articles freshly soiled by discharges from an infected individual.

Incubation period (time between exposure and first sign of illness). Two to three weeks.

¹ The tabulated material in this section is modeled after and partly based on standards in *The Control of Communicable Diseases*, Reprint from No. 436, Public Health Reports, October 17, 1917, pages 1706 to 1733. Government Printing Office, Washington, D.C. This booklet was devised by a special committee of which Dr. Haven Emerson was chairman.

Period of communicability. Until the primary scabs have disappeared from the mucous membranes and the skin.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms.

The differential diagnosis of this disease *from smallpox* is important, especially in persons over fifteen years of age.

2. Isolation — Exclusion of patient from school, and prevention of contact with non-immune persons.

3. Immunization (special serum for protecting against an attack of the disease) — None. Experimental work is under way.

4. Quarantine — None.

5. Concurrent disinfection (during the illness) — All articles soiled by discharges from lesions.

6. Terminal disinfection (at the end of the illness) — Thorough cleaning.

B. General measures. None.

DIPHTHERIA

A Board of Health certificate is required for readmission. This very serious disease may attack the heart and the kidneys especially. Overexertion is undesirable till the child is again in the most robust health.

Susceptibility can be determined by the Schick Test, and the individual can be successfully immunized against the disease by means of toxin-antitoxin inoculations (protection lasts at least eleven years). No immunity after inoculations is guaranteed unless a

second Schick Test six months after the last inoculation is negative and therefore proves immunity is present.

Eventually, a child with a negative Schick Test who is shown by cultures not to be a diphtheria carrier, may be readmitted to school after exposure, provided he has no further contact with the sick child. At present too few children are known to be immune to make this plan practical.

Infectious agent. *Bacillus diphtheriae* (the Klebs-Loeffler bacillus).

Source of infection. Discharges from diphtheritic lesions of nose, throat, conjunctiva, and wound surfaces. Secretions from the nose and throat of carriers of the bacillus.

Mode of transmission. Directly by personal contact, indirectly by articles freshly soiled with discharges, or through infected milk or milk products.

Incubation period. Usually two to five days, occasionally longer if a healthy carrier stage precedes the development of clinical symptoms.

Period of communicability. Until virulent bacilli have disappeared from the secretions and the lesions. The persistence of the bacilli after the lesions have healed is variable. In fully three quarters of the cases they disappear in two weeks. In 95 per cent of cases the bacilli disappear in four weeks. In exceptional cases virulent bacilli remain in the throat and discharge from two to six months.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms with confirmation by bacteriological examination of

discharges. Use of the Schick Test (read in twenty-four hours) as a diagnostic measure.

2. Isolation — Until two cultures from the throat and two from the nose, taken not less than twenty-four hours apart, fail to show the presence of diphtheria bacilli. Isolation may be terminated if persistent diphtheria bacilli prove non-virulent. Where termination by culture is impracticable, cases may be terminated with fair safety as a rule sixteen days after the onset of the disease.

3. Immunization — Exposed susceptibles to be promptly immunized by antitoxin. (By *susceptibles* is meant such individuals as are found to be non-immune by the Schick Test; i.e., those who give a positive reaction.) Immunity thus obtained is brief, probably a few weeks.

4. Quarantine — All exposed persons until shown by bacteriological examination not to be carriers.

5. Concurrent disinfection — All articles which have been in contact with the patient and all articles soiled by discharges from the patient.

6. Terminal disinfection — Thorough airing and sunning of the sick room, with cleaning or renovation.

B. General measures:

1. Pasteurization of milk supply.
2. Application of the Schick Test to all contacts, and immunization of all susceptibles, by antitoxin.
3. Application of the Schick Test to all children.
4. Immunization by toxin-antitoxin inoculation of all susceptibles.
5. Determination of presence or absence of carriers among contacts and, so far as practicable, in the community at large.

GERMAN MEASLES (RUBELLA)

This disease is sometimes confused with scarlet fever. The fact that the rash fades rapidly (within a day or two) contrasts with the longer existence of a scarlet fever rash. The disease is usually very mild.

Infectious agent or cause of the disease. Unknown.

Source of infection. Secretions of the mouth and possibly of the nose.

Mode of transmission. By direct contact with the patient or with articles freshly soiled with the discharges from the nose or throat of the patient.

Incubation period. From ten to twenty-one days.

Period of communicability. Eight days from the onset of the disease.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms.
2. Isolation — Separation of the patient from non-immune children, and exclusion from school and public places for the period of presumed infectivity.

3. Immunization — None.

4. Quarantine — None except exclusion of non-immune children from school and public gatherings from the eleventh to the twenty-second day from the date of exposure to a recognized case.

5. Concurrent disinfection — Discharges from the nose and throat of the patient and articles soiled by discharges.

6. Terminal disinfection — Airing and cleaning.

B. General measures. None.

INFANTILE PARALYSIS (POLIOMYELITIS)

Paralyses often persist. The disease is usually very severe and often incapacitates the child wholly or partially for some months. There are a certain number of very mild cases which are only discovered as a result of the finding of some mild paralysis several years later.

Infectious agent or cause of the disease. Not definitely determined. Probably Flexner and Noguchi's organism.

Source of infection. Nose, throat, and bowel discharges of the infected persons or articles recently soiled therewith. Healthy carriers are supposed to be common.

Mode of transmission. By direct contact with an infected person or with a carrier of the virus, or indirectly by contact with articles freshly soiled with the nose, throat, or bowel discharges of such persons.

Incubation period. From three to ten days, commonly six days.

Period of communicability. Unknown, apparently not more than twenty-one days from the onset of the disease, but may precede onset of clinical symptoms by several days.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms, assisted by chemical and microscopical examination of the spinal fluid.

2. Isolation of all recognized cases in screened rooms.

3. Immunization — None. For treatment, the blood serum of convalescent or recovered cases of infantile

paralysis¹ has been used. Such serum is not available except in certain large cities. Special horse serum has also been used. Neither method is available commonly.

4. Quarantine — Quarantine of exposed children of the household and of adults of the household whose vocation brings them into contact with children, or who are food handlers, for fourteen days from last exposure to a recognized case.

5. Concurrent disinfection — Nose, throat, and bowel discharges and articles soiled therewith.

6. Terminal disinfection — Cleaning.

B. General measures during epidemics :

1. Search for and examination of all sick children.
2. Isolation of all children with fever pending diagnosis.

3. Education in such technic of bedside nursing as will prevent the distribution of the infectious discharges to others from cases isolated at home.

MEASLES

Children with this disease often take pneumonia or have mastoid or other serious diseases following the attack.

Infectious agent or cause of the disease. A filterable virus.

Source of infection. Buccal and nasal secretions of an infected individual.

Mode of transmission. Directly from person; indirectly through articles freshly soiled with the buccal

¹ Zingher, "The Diagnosis and Serum Treatment of Anterior Poliomyelitis," *Journal of the American Medical Association*, Vol. 68, page 817 (March 17, 1917).

discharges of an infected individual. *The most easily transmitted of all communicable diseases.*

Incubation period. Seven to eighteen days, usually fourteen days.

Period of communicability. During the period of catarrhal symptoms and until the cessation of abnormal mucous membrane secretions — minimum period of seven days; from two days before to five days after the appearance of the rash.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms. Special attention to rise in temperature, Koplik spots (bluish-white spots about the size of a pinhead, surrounded by a reddish background found inside the cheeks and lips, before the rash appears), and catarrhal symptoms in exposed individuals.

2. Isolation — During period of communicability.

3. Immunization — Studies are reported by Zingher¹ on the use of the serum (plasma or whole blood) of convalescent persons as a means of securing a brief immunity for exposed persons. Up to the fifth day after exposure, immunity can be obtained by these inoculations. Previously, no method of immunization was available. The practical use of this method is limited because the material is difficult to obtain.

4. Quarantine — Exclusion of exposed susceptible school children and teachers from school until fourteen days from the last exposure. This applies to exposure

¹ Zingher, "Convalescent Whole Blood, Plasma, and Serum in Prophylaxis of Measles," *Journal of the American Medical Association*, Vol. 82, pages 1180-1187 (April 12, 1924).

in the household. Exclusion of exposed susceptible children from all public gatherings for the same period.

5. Concurrent disinfection — All articles soiled with the secretions of the nose and throat.

6. Terminal disinfection — Thorough cleaning.

B. General measures :

1. Daily examination of exposed children and of other possibly exposed persons. This examination should include record of body temperature. A non-immune exposed individual exhibiting a rise of temperature of half a degree Centigrade (about a degree Fahrenheit) or more should be promptly isolated pending diagnosis.

2. Schools should not be closed or classes discontinued where daily observation of the children by a physician or nurse is provided for.

3. Education as to special danger of exposing young children to those exhibiting acute catarrhal symptoms of any kind.

MUMPS

Mumps is a swelling of the salivary gland, called the parotid, which lies in front of the ear; and, less often, a swelling of the other salivary glands (submaxillary and submental) under the edge of the jaw. The "vinegar" or "acid" test has no significance if negative. The disease is very contagious. It sometimes is followed by swelling of the genitals or breasts in older children.

Infectious agent or cause of the disease. Unknown.

Source of infection. Secretions of the mouth and possibly of the nose.

Mode of transmission. By direct contact with an infected person or with articles freshly soiled with the

discharges from the nose or throat of such infected person.

Incubation period. From four to twenty-five days. The most common period, eighteen days, accepted as usual. A period of twenty-one days is not uncommon.

Period of communicability. Unknown, but assumed to persist until the parotid gland has returned to its normal size.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Inflammation of the salivary or Stenson's duct (orifice is inside each cheek opposite the upper second molar teeth) may be of assistance in recognizing the early stage of the disease. The diagnosis is usually made on swelling of the parotid gland.

2. Isolation — Separation of the patient from non-immune children and exclusion of the patient from school and public places for the period of presumed communicability (see above).

3. Immunization — None.

4. Quarantine — Limited to exclusion of non-immune children from school and public gatherings for twenty-one days after last exposure to a recognized case.

5. Concurrent disinfection — All articles soiled with the discharges from the nose and throat of the patient.

6. Terminal disinfection — None.

B. General measures — None.

PINK EYE (ACUTE, EPIDEMIC, OR CONTAGIOUS CONJUNCTIVITIS)

This disease is an acute catarrhal infection of the lining of the eyelids, and is very easily transmitted

through direct contact or through secondary objects. Epidemics occur in classrooms and schools, chiefly in spring and autumn. Symptoms are marked. Discharge is profuse. (See pages 92 and 96.)

Infectious agent or cause of the disease. The Koch-Weeks bacillus or the pneumococcus.

Source of infection. Discharge from conjunctivæ (lining of eyelids).

Modes of transmission. Contact with an infected person or with articles freshly soiled with discharges of such person.

Incubation period. Irregular, probably thirty-six to forty-eight hours.

Period of communicability. During the course of the disease and until the discharge from the infected mucous membrane has ceased.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms, confirmed where possible by bacteriological examination. This is important because the disease is similar to Acute Infectious Conjunctivitis or babies' sore eyes, which are due to other organisms which may seriously injure the vision. Inquire if the baby in the house has sore eyes.

2. Isolation — None, provided the patient is under adequate medical supervision.

3. Immunization — None.

4. Quarantine — None.

5. Concurrent disinfection — Disinfection of conjunctival discharges and articles soiled therewith.

6. Terminal disinfection — Thorough cleansing.

B. General measures :

1. Enforcement of regulations forbidding use of common towels and toilet articles.
2. Education as to personal cleanliness.

RABIES OR HYDROPHOBIA

School children are bitten frequently by pet animals. This is one objection to having pets in school. Most animals are not "mad" and rabies will not result. Nevertheless, *every such case should be treated by a physician.*

Infectious agent or cause of the disease. Unknown.

Source of infection. Saliva of infected animals, chiefly dogs.

Mode of transmission. Inoculation with saliva of infected animals through abrasion of skin or mucous membrane, almost always by bites or scratches.

Incubation period. Usually two to six weeks. May be prolonged to six months or even longer.

Period of communicability. For fifteen days in the dog (not known in man) before the onset of clinical symptoms and throughout the clinical course of the disease.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms, confirmed by the presence of Negri bodies (microscopic objects) in the brain of an infected animal, or by animal inoculations with material from the brain of such infected animal.

2. Isolation — None, if patient is under adequate medical supervision, and the immediate attendants are

warned of the possibility of inoculation by human virus (poison from the disease).

3. Immunization — Preventive vaccination (Pasteur treatment) after exposure to infection by inoculation. This Pasteur immunization is expensive and requires daily administration over a long period (twenty-one days). The immunity appears two weeks after the treatment and lasts at least several years.

4. Quarantine — None.

5. Concurrent disinfection — Saliva of patient and articles soiled therewith.

6. Terminal disinfection — Thorough cleaning.

B. General measures :

1. Inoculation of pet animals, as practiced in Detroit and elsewhere.

2. Muzzling of dogs when on public streets or in places to which the public have access.

3. Detention and examination of dogs suspected of having rabies.

4. Immediate antirabic treatment of people bitten by dogs or by other animals suspected or known to have rabies, unless the animal is proved not rabid by subsequent observation or by microscopic examination of the brain and cord.

SCARLET FEVER

The recent work of the Dicks has revolutionized the knowledge of this very serious disease. Scarlet fever may be accompanied or followed by heart or kidney lesions, running ears, empyema (pus in the chest). Some cases are mild, but persons catching the disease from these cases may be very ill. A Board of Health

certificate is required for readmission to school. It is now possible to determine whether an individual is susceptible to scarlet fever (Dick Test) and if susceptible to protect him —

1. For a brief period of weeks (where exposure to scarlet fever has occurred) by the special serum ;
2. For a longer period of time (as yet unknown but supposed to be as long as the protection derived from the diphtheria inoculations) by means of inoculation material devised by the Dicks and now obtainable from certain Boards of Health, as in New York City, and a few makers of biological products.

At the present time one of the best contagious-disease hospitals uses cultures for the release of patients from quarantine for scarlet fever, in the same manner as cultures are used for release of diphtheria cases. The time may come when a child exposed to scarlet fever may be readmitted to school if he has a negative Dick Test and is shown by cultures not to be a carrier, provided he has no contact with the sick child.

Infectious agent or cause of the disease. A hemolytic streptococcus.

Source of infection. The belief at present is that the virus or toxin is contained in the secretions from the nose and throat, in the blood and in the lymph nodes, and that it is given off in the discharges from the mouth, the nose, the ears, and from broken-down glands of infected persons. The organisms have been isolated from the nose and throat.

Mode of transmission. Directly by personal contact with an infected person ; indirectly by articles freshly soiled with discharges of an infected person, or through contaminated milk.

Incubation period. Two to seven days, usually three or four days.

Period of communicability. Four weeks from the onset of the disease, without regard to desquamation, and until all abnormal discharges have stopped and all open sores have healed.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — By clinical symptoms. The use of the Dick Test as a diagnostic measure.

2. Isolation — In home or hospital, maintained in each case until the end of the period of infectivity.

3. Immunization — Exposed susceptibles, as determined in twenty-four hours by the Dick Test, to be promptly immunized by the special serum.

4. Quarantine — Exclusion of exposed susceptible children and teachers from school, and food handlers from their work, until seven days have elapsed since the last exposure to a recognized case.

5. Concurrent disinfection — All articles which have been in contact with the patient and all articles soiled with discharges of the patient.

6. Terminal disinfection — Thorough cleansing.

B. General measures :

1. Pasteurization of milk supply.

2. Application of the Dick Test to all contacts, and immunization of all susceptibles, by the special serum.

3. Application of the Dick Test to all children.

4. Immunization by the Dicks' inoculation material, of all susceptibles.

5. Daily examination of exposed children and of

other possibly exposed persons for a week after last exposure.

6. Schools should not be closed where daily observation of the children by a physician or nurse can be provided. Private schools are sometimes an exception to this rule.

7. Education as to the special danger of exposing young children to those exhibiting acute catarrhal symptoms of any kind.

SMALLPOX

A very serious disease. A Board of Health certificate is required for readmission to school. Scarring (pock marks) of the skin usually results. Vaccination successfully carried out protects for five years and gives greater immunity from the disease than does having smallpox itself. For full protection, revaccination must take place every five years. In case of definitely known exposure, the individual ought to be revaccinated unless he has been vaccinated successfully within a year. *No protection is to be expected unless there is a successful "take."* If the vaccination does not take, this is no proof of the immunity of the individual.

Infectious agent or cause of the disease. Unknown.

Mode of transmission. By direct personal contact; by articles soiled with discharges from lesions. The virus may be present in all bodily discharges, including bowel movements and urine. It may be carried by flies.

Incubation period. Twelve to fourteen days, although cases with an incubation period of twenty-one days are reported.

Period of communicability. From the first symptoms to disappearance of all scabs and crusts.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms.

Tests for immunity may be useful (reaction to vaccination).

2. Isolation — Hospital isolation in screened wards, free from vermin, until the period of infectivity is over.

3. Immunization — Vaccination.

4. Quarantine — Segregation of all exposed persons for twenty-one days from date of last exposure, or until protected by vaccination.

5. Concurrent disinfection — All discharges and articles soiled therewith.

6. Terminal disinfection — Thorough cleaning and disinfection of the premises.

B. General measures:

General vaccination in infancy, revaccination of children on entering school, and of entire population when the disease is prevalent. The cool months of the year are preferable for vaccination. Avoid vaccination during periods of teething or other mild and common indispositions of young children. Vaccination before the age of six months is particularly desirable.

TETANUS OR LOCKJAW

School children are constantly receiving slight cuts or other breaks in the skin while at play. Since the organism is found in animal manure, such injuries, if received in streets or gardens, or from rusty nails, knives, and other implements which may have lain in such places, ought to be treated by a physician. He should be asked whether anti-tetanic serum should be

given. This serum proved most successful in the World War, where the wounded were given the serum practically as a routine.

Infectious agent or cause of the disease. Bacillus tetani. Grows best where air is exhausted (anaerobe).

Source of infection. Animal manure and soil fertilized with animal manure, and, rarely, the discharges from wounds.

Mode of transmission. Inoculation, or wound infection.

Incubation period. Six to fourteen days, usually nine.

Period of communicability. Patient not infectious, except in rare instances where wound discharges are infectious.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms ; may be confirmed bacteriologically.
2. Isolation — None.
3. Immunization — By antitoxin, single or repeated injection.
4. Quarantine — None.
5. Concurrent disinfection — None.
6. Terminal disinfection — None.

B. General measures :

1. Educational propaganda such as safety-first campaigns, and "safe and sane Fourth of July" campaigns.
2. Prophylactic use of tetanus antitoxin if wounds have been acquired in regions where the soil is known to

be heavily contaminated and in all cases where wounds are ragged or penetrating.

3. Removal of all foreign matter as early as possible from wounds.

4. Supervision of all biological products, especially vaccines and sera.

5. Using only very light dressings over vaccination wounds — never use vaccination shields or thick dressings, which shut out the air from the wound, thus creating an ideal condition for the growth of the organism, if by any chance the organism should reach the wound in some manner.

TRACHOMA

This is a highly contagious form of infection of the eyelids. It is found among people who live crowded closely together, who are careless about cleanliness, and who are in bad hygienic surroundings — therefore among the poorer classes.

Infectious agent or cause of the disease. This cannot be stated positively. There may be several.

Source of infection. Secretions and pussy discharges, especially from the lining of the eyelids of the infected persons.

Mode of transmission. By direct contact with infected persons and indirectly by contact with articles freshly soiled with infective discharges of such persons.

Incubation period. Undetermined. The disease begins insidiously.

Period of communicability. During the presence of lesions of the lining of the eyelids or other mucous membranes, or of discharges from such lesions.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms.

Bacteriological examination of the eye secretions and lesions may be useful.

2. Isolation — Exclusion of the patient from general school classes.

3. Immunization — None.

4. Quarantine — None.

5. Concurrent disinfection — All discharges and articles soiled therewith.

6. Terminal disinfection — None.

B. General measures :

1. Search for cases by examination of school children, of immigrants, and among the families and associates of recognized cases. In addition, search for acute secreting or "mattery" disease of lining of the eyelids and adjoining mucous membranes, both among school children and their families, and treatment of such cases till cured.

2. Elimination of common towels and toilet articles from public places.

3. Education in the principles of personal cleanliness and the necessity of avoiding direct or indirect transference of body discharges.

4. Control of public dispensaries where communicable eye diseases are treated.

TUBERCULOSIS

This disease is of two general types — lung or pulmonary, and non-pulmonary. It is known as the "great white plague" because of its devastations of the

human race. *It is preventable and curable.* The present school health programs could be justified upon the sole ground of prevention of tuberculosis. Because one of the first signs of the disease is a drop in weight (progressive and frequently rapid), monthly weighing of all children in schools is recommended.

Pulmonary Tuberculosis

Infectious agent or cause of the disease. Bacillus tuberculosis (human). Bovine, in rare cases.

Source of infection. The specific organism present in the discharges from any open tuberculous lesions, the most important being sputum. Of less importance are discharges from the intestinal and genito-urinary tracts, or from lesions of the lymphatic glands, bones, and skin.

Mode of transmission. Direct or indirect contact with an infected person by coughing, sneezing, or other droplet infection, kissing, common use of unsterilized food utensils, pipes, toys, drinking cups, etc., and possibly by contaminated flies and dust.

Incubation period. Variable, and dependent upon the type of disease.

Period of communicability. Exists as long as the specific organism is eliminated by the host. Commences when a lesion becomes an open one (i.e., discharging tubercle bacilli) and continues until it heals or death occurs.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — By clinical symptoms and by thorough physical examination, confirmed by bac-

teriological examination (sputum) and by serological tests (complement fixation, von Pirquet, tuberculin).

2. Isolation of such "open" cases as do not observe the precautions necessary to prevent the spread of the disease.

3. Immunization — None.

4. Quarantine — None.

5. Concurrent disinfection — Cleaning and renovation.

B. General measures :

1. Education of the public in regard to the dangers of tuberculosis and the methods of control, with especial stress upon the danger of exposure and infection in early childhood.

2. Provision for dispensaries and visiting-nurse service for discovery of early cases and supervision of home cases.

3. Provision of hospitals for isolation of advanced cases, and sanatoria for the treatment of early cases.

4. Provision of open-air schools and preventoria for pretuberculous children.

5. Improvement of housing conditions and the nutrition of the poor.

6. Ventilation, and elimination of dusts in industrial establishments and places of public assembly.

7. Improvement of habits of personal hygiene and betterment of living conditions.

8. Separation of babies from tuberculous mothers at birth.

Tuberculosis (Other than Pulmonary)

Infectious agent or cause of the disease. Bacillus tuberculosis (human and bovine).

Source of infection. Discharges from mouth, nose, bowels, and genito-urinary tract of infected humans; articles freshly soiled with such discharges; milk from tuberculous cattle; rarely the discharging lesion of bones, joints, and lymph nodes.

Mode of transmission. By direct contact with infected persons, by contaminated food, and possibly by contact with articles freshly soiled with discharges of infected persons.

Incubation period. Unknown.

Period of communicability. Until lesions are healed.

Methods of control.

A. The infected individual and his environment:

1. Recognition of the disease — Clinical symptoms confirmed by bacteriological and serological examinations.

2. Isolation — None.

3. Immunization — None.

4. Quarantine — None.

5. Concurrent disinfection — Discharges and articles freshly soiled with them.

6. Terminal disinfection — Cleaning.

B. General measures:

1. Pasteurization of milk and inspection of meats.

2. Eradication of tuberculous cows from milch herds used in supplying raw milk.

3. Patients with open lesions should be prohibited from handling foods which are consumed raw. Such danger is eliminated by compulsory examination of food handlers. On page 86 is a form used for such examinations.

EXAMINATION OF FOODHANDLER

No.....

Name..... Age..... Male..... Female..... Nativity.....

Address..... Borough..... Occupation.....

Where Employed..... Addr..... Bor.....

Place check (✓) YES or NO for each of the following Disease Conditions:

LUNGS

Tuberculosis: Active Yes No Inactive Yes No

Specify signs of other lung diseases.

If signs of tuberculosis exist, send applicant to clinic for sputum examination and for decision as to permit to work.

VENEREAL
DISEASESSyphilis-Chancre Yes No Mucus Patches Yes NoSkin Lesions Yes No Cardiac Lues Yes NoCerebro-spinal Lues Yes No

If active signs are present, send applicant to clinic

Has Wassermann been taken if inactive syphilis exists? Yes No

Encircle result—Negative 1 Plus 2 Plus 3 Plus 4 Plus

Gonorrhoea-Acute Yes No Chronic Yes NoChancroid Yes No

If acute gonorrhoea or chancroid exist, send applicant to clinic.

If chronic gonorrhoea exists, has urethral smear been taken?

 Yes No Result—Positive Negative

TYPHOID

Does applicant give history of typhoid? Yes No Date.....Has case of typhoid occurred in immediate family or place of residence? Yes No Date.....

If history of either of above is given, send applicant to clinic for Widal and stool examination.

SKIN
DISEASEScabies Yes No Pediculosis Yes NoFavus Yes No Ringworm Yes NoTuberculous Lesions Yes No

IF ANY OF THE ABOVE EXIST, SEND PATIENT TO CLINIC

I hereby certify that the above-named person has been thoroughly examined by me as to the presence of evidence of communicable diseases and has been found (free) (not free) from such disease.

Date..... Dr..... Addr.....

Foodhandler's certificates will not be issued IF THIS CARD IS NOT
COMPLETELY FILLED OUT

To be filled in by Occupational Clinic

Certificate Issued—Date.....

On Probation.....

Excluded.....

DEPARTMENT OF HEALTH—CITY OF NEW YORK—BUREAU OF PUBLIC HEALTH EDUCATION

TYPHOID AND PARATYPHOID FEVERS

These diseases would be distributed at school among school children chiefly through raw foods, through foods handled by typhoid carriers (as in the lunch room), and through contaminated water or milk supply. Hence no person should be employed in a school lunch room who has not passed a food handler's physical examination. Water and milk supplies must be *known* to be pure and safe. The same is true for foods eaten raw. At the Battle Creek Sanitarium all raw vegetables must be washed with a special disinfecting solution (harmless to human beings) before being served.

A definite immunity of limited duration can be conferred by inoculations of solutions of killed typhoid and paratyphoid bacilli.

Infectious agents or cause of the disease.

Paratyphoid fever — *Bacillus paratyphosus A or B.*

Typhoid fever — *Bacillus typhosus.*

Sources of infection. Bowel discharges and urine of infected persons and foods contaminated with the discharges of infected persons or of healthy carriers. Healthy carriers may be numerous in an outbreak.

Mode of transmission. Directly by personal contact; indirectly by articles freshly soiled with the discharges of infected persons or through water, milk, shellfish, or other food contaminated by such discharges. Contaminated flies have been common means of transmission in epidemics.

Incubation periods.

Paratyphoid fever — four to ten days; averaging seven days.

Typhoid fever — seven to twenty-three days, averaging ten to fourteen days.

Period of communicability. From the appearance of prodromal symptoms, throughout the illness and relapses, during convalescence, and until repeated bacteriological examinations of the discharges show persistent absence of the infecting organisms.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms, confirmed by specific agglutination test (Widal's laboratory test with cultures of bacteria from the patient's secretions) and bacteriological examination of the blood, bowel discharges, or urine.

2. Isolation — In fly-proof room, preferably under hospital conditions, of such cases as cannot command adequate sanitary environment and nursing care in their homes.

3. Immunization — Of susceptibles who are known to have been exposed or are suspected of having been exposed.

4. Quarantine — None.

5. Concurrent disinfection — Disinfection of all bowel and urinary discharges and articles soiled with them.

6. Terminal disinfection — Cleaning.

B. General measures :

1. Purification of public water supplies.

2. Pasteurization of public milk supplies.

3. Supervision of other food supplies and of food handlers, by examination and other means as needed.

4. Prevention of fly breeding.

5. Sanitary disposal of human excreta.
6. Extension of immunization by vaccination as far as practicable. The duration of such immunity cannot be stated.
7. Supervision of typhoid or paratyphoid carriers and their exclusion from handling foods.
8. Systematic examination of specimens of bowel movements from those who have been in contact with recognized cases, to detect carriers.
9. Exclusion of suspected milk supplies pending discovery of the person or other cause of contamination of the milk.
10. Exclusion of water supply, if contaminated, until adequately treated with hypochlorite or other efficient disinfectant, or unless all water used for toilet, cooking, and drinking purposes is boiled before use.

WHOOPING COUGH

A very serious disease, although usually considered mild. Ruptures (hernias) may result from the coughing. Many resulting cases of pneumonia in young children end fatally. Because of the irritated condition of the air passages, the child will catch cold easily and cough a great deal during the rest of the school year until warm weather comes. It is not necessary to exclude for this late cough. Diagnostic difficulties arise because diagnosis cannot be made without a characteristic whoop.

Infectious agent or cause of the disease. Bacillus pertussis (Bordet-Gengou).

Source of infection. Discharges from the laryngeal and bronchial mucous membranes of infected persons

(sometimes also of infected dogs and cats, which are known to be susceptible).

Mode of transmission. Contact with an infected person or animal or with articles freshly soiled with the discharges of such person or animal.

Incubation period. Within fourteen days.

Period of communicability. Particularly communicable in the early catarrhal stages before the characteristic whoop makes the clinical diagnosis possible. Communicability probably persists not longer than two weeks after the development of the characteristic whoop, or approximately four weeks after the onset of catarrhal symptoms.

Methods of control.

A. The infected individual and his environment :

1. Recognition of the disease — Clinical symptoms supported by a differential leucocyte (scientific name of white blood cell) count, and confirmed where possible by bacteriological examination of bronchial secretions. The leucocyte count in the early stages is markedly increased from the normal of about five to ten thousand up to fifteen to fifty thousand, with lymphocytes forming sixty to eighty per cent of the cells as compared with the normal of twenty-five to thirty-three per cent.

2. Isolation — Separation of the patient from susceptible children, and exclusion of the patient from school and public places, for the period of presumed infectivity.

3. Immunization — Use of prophylactic vaccine recommended by some observers. Not effective in all cases.

4. Quarantine — Limited to the exclusion of non-immune children from school and public gatherings for fourteen days after their last exposure to a recognized case.
5. Concurrent disinfection — Discharges from the nose and throat of the patient and articles soiled with such discharges.
6. Terminal disinfection — Cleaning of the premises used by the patient.

B. General measures:

Education in habits of personal cleanliness and in the dangers of association or contact with those showing catarrhal symptoms with cough.

NOTE. Recent reports state that X-ray treatments, properly given, hasten the recovery of some cases of this disease. Studies are being made regarding termination of quarantine of cases when cultures are negative, it being believed that infectivity ends at this time. Quarantining will be considerably shortened by this method, if further research proves it reliable.

CHAPTER TWELVE

DISEASES OF THE SKIN AND MUCOUS MEMBRANES CONVEYED BY CONTACT WITH PERSONS OR OBJECTS

REQUIREMENTS FOR READMISSION TO SCHOOL

CASES of impetigo, head lice, unfamiliar skin lesions, pink eye, ringworm, and such diseases should be excluded from school. Such exclusion is called for on the basis of the list of Indications of Health Disorders printed on page 22.

Readmission in all such cases is granted to a pupil (1) when there is no further possibility of his communicating any disease to other children in the room; and (2) when he is capable of accepting at least a part of the school program without injury to himself.

Impetigo (mattery sores usually around the nose and mouth). Readmission is permitted when the sores have entirely disappeared except for the red base on which the crusts (scabs) rested. *There must be no crusts left.* The region of the disease will continue to be slightly inflamed for several weeks because of the vigorous treatment needed to cure the disease.

Pediculosis capitis (head lice). There must be no active lice. Preferably, there should be no nits (eggs) either. Nits are tiny pearly-gray bodies attached firmly to the shafts of the hairs and can be seen with the naked eye. If children with nits (and only nits) are allowed to return to school, the case must be kept under active treatment.

Pink eye. The lids must not stick together in the morning. There must be no pussy discharge in the corners of the eyes or on the lids. The redness or in-

flammation of the lining of the eyelids must have changed to a pinkish color.

Poison ivy dermatitis (skin eruption). This includes eruptions from any member of the *Rhus* family, such as poisoning from ivy, oak, and dogwood. The skin becomes inflamed because of contact with a volatile oil from the plant. It was formerly held that, before a child might be readmitted, the disease must have passed the very red and itchy stage or the "weeping" or watery discharging stage; i.e., the sores must have become thoroughly dried. Most authorities believe that if the eruption is under treatment and a bandage is kept over the affected area, the child may attend school, with the rash in any stage. The ivy rash will not recur in the affected child without a new exposure to the volatile oil, but a "weeping" eczema may occur at the same place even though the individual has not been near the ivy plant. The affected child may "poison" the affected skin by scratching, since his finger nails always have many bacteria on them. In any case, ivy poisoning, not being thought contagious, is far less of a problem than itch, pediculosis, and other communicable diseases. Children must be taught how to recognize and avoid the plants of the *Rhus* group, and how to care for themselves if they think they have touched one of these plants. (See page 97.)

Some very interesting conclusions regarding ivy poisoning have been reached by Krause and Weidman¹ as a result of a series of experiments on human volunteers. They confirm the work of others that —

¹ *Health News*, New York State Department of Health, July 20, 1925, and *Journal of the American Medical Association*, Vol. 84, No. 26, page 1906 (June 27, 1925).

1. The discharge from the lesion does not disseminate the disease. The virus itself must come in contact with the part.

2. Susceptible individuals may contract ivy poisoning at any time of the year, provided the juice of the plant comes in contact with the skin.

Some of their other conclusions are :

1. Repeated attacks tend to shorten all the stages of subsequent attacks.

2. Local immunity is not developed by repeated attacks of ivy poisoning.

3. There is such a thing as absolute (and probably permanent) immunity against ivy poisoning.

4. In the series, two thirds of the men who believed themselves immune were not immune.

5. In 45 per cent of the susceptibles it was necessary that some defect in the epidermis, such as scratches, should be present before a dermatitis would develop.

6. It appears that all the commoner laboratory animals are immune to this virus.

7. The pain at the sites of intramuscular injections outweighs the danger of future attacks of ivy poisoning such as are only suppositional in the commoner walks of life.

The above statements probably represent the most accurate information regarding ivy poisoning. Hence, at present, the following would be logical procedures in schools :

1. The child attacked need not be excluded from school attendance, except (1) where he himself might receive injury thereby, as where the region of the eyes was so swollen that vision was difficult ; (2) for æsthetic reasons.

2. He would be excluded from the swimming pool on the same basis that any child with an open wound is excluded.

3. He would probably not participate in physical-

education activities because of the personal discomfort which would result to him.

4. Nothing need be done about his books and other belongings.

Ringworm. The red ring must have disappeared. An area of general redness may remain at the site of the ring for a week or two as a result of the treatment given. In this disease it is characteristic for the ring to enlarge, the ring representing the active stage of the disease. Inside the ring, healing occurs. Therefore no cure exists till the ring has disappeared.

Scabies (itch). Readmission is permitted after the disappearance of the tiny black lines (burrows of the itch mites) in the web of the fingers or elsewhere. Itching must have stopped, and the scratch marks and secondary eczematoid lesions must have begun to heal. Under careful and proper treatment, these cases can be cured in from twenty-four hours to three days. Watch for a new attack of the disease as a result of other cases which may have occurred in the family.

Trachoma (see page 81). Only when a pupil presents a certificate from the health authorities, may he be readmitted. This disease is highly contagious and no child known to have it should be readmitted till the "catching" stage has passed and an expert has so certified.

FIRST-AID TREATMENT

Frequently the school must render first-aid treatment for some of these cases of infection of the skin or mucous membranes. Below are printed methods which have proved efficient.

Impetigo. Apply to the sores ammoniated mercury ointment. The treatment is more satisfactory if the crusts of the sores are removed, as by scrubbing with a brush (which must be sterilized afterwards or destroyed), or by picking them off with forceps. (Sterilize forceps by boiling for five to ten minutes both before and after using.) Wash the hands very carefully after giving treatment.

Pediculosis capitis (head lice). "Derbac" soap shampoos are effective where used.

A satisfactory home treatment method, which appears on a printed form used by the Demonstration School in which the junior author is physician, is as follows:

Saturate the hair and scalp with kerosene and leave it on three hours. Then shampoo the head thoroughly with soap and water. Do not expose the child to a flame.

(You can use tincture of larkspur instead of kerosene. Keep the liquid out of the eyes. If you use tincture of larkspur, cover the head with a towel for at least six hours; then shampoo head thoroughly.)

In either case, remove the nits with a fine comb wet in vinegar.

The child will not be readmitted to school until all the nits have been removed. This should not require more than one or two days' absence.

Pink eye (acute conjunctivitis). Two drops of ten per cent argyrol or of mercurochrome of proper strength (recommended by the manufacturers) should be dropped on each eyeball two or three times a day during the infectious period (when there is "matter" in the corner of the eye and on the lids and when the insides of the lids are inflamed). The glass dropper must be sterilized by being boiled five minutes before and after each use.

Poison ivy dermatitis. Methods of protective inoculation of susceptible persons are being developed and are reported to be satisfactory in a few cases (minute doses of the poison are used).

If an exposure to poison ivy has occurred within a few hours, the part should be scrubbed vigorously with soap and water, and alcohol applied, as a preventive measure. Some use gasoline instead of alcohol. Avoid delay.

If the rash has developed, some soothing dressing should be applied. Be sure the child does not scratch the skin. Scratching may spread the disease from the finger nails during the first few hours or the first day after exposure; and later it may introduce infection into the wound and delay healing. Calamine lotion sopped frequently on the sores will relieve the itching and dry up the sores. Moist dressings of salt solution (one teaspoonful of table salt to one glass of water), frequently changed, are very comfortable. Some use a saturated solution of Epsom salts, which is allowed to dry on the skin of the region affected.

Ringworm. The red ring should be painted with full strength of tincture of iodine. This burns the skin but kills the organism causing the disease. Application is made twice a day until the red ring (not the general area of inflammation) has disappeared. Treatment must be given skillfully; otherwise severe burns of the skin will result.

Scabies (itch). Two excellent methods are printed below. Home treatment of the itch is most successful if directions are followed out in detail by the family. The following directions were used successfully by one of the authors in the New Bedford public schools.

A GOOD TREATMENT FOR THE ITCH¹

1. Remember that the child can easily give the disease to the rest of the family.
2. Boil underwear, stockings, sheets and pillow cases, cloths and towels which the child has used, and iron the quilts and blankets twice with a hot iron.
3. For three nights rub the body very thoroughly with the ointment which you can get at a drug store with the prescription printed below, or else make a mixture of four parts lard and one part powdered sulphur, thoroughly mixed, and rub this on the body but *not on the head, face, or neck*.
4. In the morning, after leaving the ointment on all night, take a warm bath with soap, and put on clean underwear, stockings, and other clothing touching the skin.
5. For two more nights, repeat 2, 3, 4.
6. If the child is not cured by this time, you should go at once to a doctor and keep the child under his care until cured.

TO BE FILLED AT A DRUG STORE

B	Sulphur	7.50
	Beta Naphthol	7.50
	Lard q.s.	90.
M		

Sig. Apply as directed.

A TWENTY-FOUR-HOUR METHOD OF TREATING ITCH

In 1920 Dr. Svend Lomholt described a twenty-four-hour method of treatment of scabies and reported 678 cases treated without a single relapse. As described by Greenwood,² the ointment in use at the Massachusetts General Hospital is prepared as follows:

1. One kilogram of sublimed sulphur is mixed with 2 kg. of 50 per cent solution of potassium hydroxid (as free from water as can be obtained). Gentle heat is applied until reaction ceases and the solution becomes clear. When the process is complete, one should be sure that the sulphur is in excess to a slight degree.

2. Petrolatum, 225 gm., is mixed with wool fat, 225 gm., without heat.

¹ Rowell, *Medical Clinics of North America*, Vol. 7, No. 3, page 850; W. B. Saunders Co.

² Arthur M. Greenwood, "The Danish Treatment of Scabies," *Journal of the American Medical Association*, February 9, 1924.

3. To this mixture is added 375 gm. of the solution of sulphur and potash mentioned above.
4. To 40 gm. of 20 per cent sodium hydroxide solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly until reaction ceases, poured on filter paper, and washed thoroughly; then the washed precipitate is added to the foregoing.
5. Liquid petrolatum is added to obtain a total weight of 1000 gm.
6. Five grams of oil of bitter almond is added to check the somewhat disagreeable odor of hydrogen sulphid.

It is usually necessary in cases of scabies to treat the entire family,—a difficult matter to carry out thoroughly with the old three-to-five-day treatment. It is in such circumstances that the twenty-four-hour method of treatment is of most value. It is necessary to be *certain* that there are no other cases in the family, if relapses are to be prevented; if there are other cases, the entire family must be treated.

Trachoma. This disease should never be treated in the school in any stage. Only an eye specialist (physician) should treat trachoma.

CHAPTER THIRTEEN

ANSWERS TO QUESTIONS PARENTS MAY ASK

AUTHORITIES now believe that healthful living, alone, is not sufficient protection against contagious diseases and that it is necessary

1. To know, whenever possible, whether a child may take a disease, if exposed; and
2. If he is susceptible, to protect him by artificial means against contagious disease to which he is susceptible and for which there is a practical, proved method of creating an artificial immunity.

Even under the best of conditions, exposures to contagious diseases occur fairly frequently; it is, and will be, practically impossible to discover *every* case of such diseases until every individual in a community gives one hundred per cent coöperation to the health authorities.

When artificial means of acquiring immunity are advocated by the school officers, parents ask for clear, concise answers to various questions.

1. *Why should children be tested for diphtheria and scarlet fever by the Schick Test and the Dick Test?*

ANSWER. (a) Because it is possible, by means of these tests, to *know* whether a child will take either of these diseases, if exposed. (b) If the child is susceptible, he can be protected against the disease by inoculations. (c) One never knows when exposure may occur. Even with the strictest precautions, exposures are almost inevitable. (d) Thousands of persons have been protected successfully from diphtheria for at least eleven

years, and the protection is still good. The method of the protection against scarlet fever is new and the duration of the acquired immunity is not known, but to date it has proved efficient. Because the method of protection against scarlet fever is similar to and based on the same principle as the protection against diphtheria, it is believed that the protection will be as lasting as that against diphtheria. (e) It is possible by these methods, properly carried out, to eradicate both diphtheria and scarlet fever, just as much as smallpox has been eradicated.

2. Why should children be vaccinated against smallpox? If a child is found susceptible to diphtheria or scarlet fever, or both, why should he be inoculated against these diseases?

ANSWER. Because these are the only methods by which susceptible children can be protected adequately and surely against these diseases. Healthful living will help to protect, but neither it nor anything else, except the approved protective methods described here, will guarantee a child immunity from these three diseases, according to present knowledge.

3. How may one know whether a child needs protection against one or all of these three diseases?

ANSWER. A. Smallpox. Unless a child has been vaccinated within five years, he cannot be considered protected. If exposure is known to have occurred a year or more after successful vaccination, it is wise to have the child revaccinated. When a child is vaccinated, his reaction will show the degree of his existing

immunity. Failure to get a "take" has no significance whatsoever.

B. Diphtheria. The Schick Test will show accurately whether a child is susceptible to diphtheria or not.

C. Scarlet fever. The Dick Test will show whether a child is susceptible to scarlet fever or not.

4. When should these tests and forms of vaccination be given?

ANSWER. *Age.* Any protection the child inherits from his parents lasts about six months. At this age he is in greater danger than at any other time in his life, and he is unprotected thereafter, unless and until repeated small exposures to contagious diseases give him specific artificial immunity, usually of limited degree. This means that it would be wise to begin to protect children when they are about six months old. The child in school, kindergarten, or nursery school ought to be immunized, if tests show he needs it.

Season. Any season is satisfactory. Late spring or early fall are best, preferably the latter. Vacations are the best time to vaccinate children. Cool weather is desirable.

Illness or poor vitality. Vaccination against smallpox or inoculations against diphtheria or scarlet fever should not be given (except in necessity) after a severe illness or during a cold. If a child is in poor health, it is best to protect against only one disease at a time. The Schick and Dick tests may be given without fear of trouble. It is very rarely necessary, because of health, to excuse a child from vaccination against smallpox except for a few months at most. Exceptions are in

cases of severe chronic skin diseases and children who are seriously ill with some chronic disease. The dangers arising from all these procedures are greatly exaggerated.

5. Should these tests and forms of vaccination and inoculation be given at the same time or in what relation to one another?

ANSWER. Vaccination against smallpox should not be performed at the same time as the other tests or inoculations. This is because of the discomfort which results from the vaccination.

The Schick and the Dick tests may, and very desirably should, be given together, since time is saved thereby and there is no known reason for not doing so. The inoculations against diphtheria and scarlet fever may be given together, unless the individual has an unusually strong susceptibility to one or both diseases as shown by the tests, or is not in robust health. Should too much discomfort result from giving the two kinds of inoculations at the same time, one can be discontinued temporarily, and given after the first series of inoculations is completed.

In choosing which shall be done first, the needs of the individual or the contagious diseases prevalent in the community at the time will determine. Usually it is wiser to complete the diphtheria protection first.

6. To whom should the parent take the child for such tests and vaccinations?

ANSWER. To the family doctor, if he is prepared to give tests and vaccinations; otherwise to some doctor whom he recommends. The local Board of Health

usually provides such service, on request, and school physicians sometimes give the tests and vaccinations.

7. What are the dangers attendant upon such tests and forms of vaccination?

ANSWER. These have been discussed elsewhere in the book (pages 109, 113, 114). In general, if the material is properly prepared and administered in a very cleanly manner, no more than temporary discomfort need be expected, usually lasting not over twenty-four hours. The startling stories sometimes told by irresponsible persons have little fact in them. Every such local story must be investigated, to correct false impressions. At present, test and inoculation material is very carefully prepared and inspected by the maker and by a federal laboratory before it is sold. If a child is very susceptible to the special diseases for which he is inoculated, he will have a more severe reaction than the less susceptible child. Certain dangers result from the presence of horse serum in the diphtheria serum and the scarlet fever serum, but these dangers exist only for persons sensitive to horse serum, and if the doctor is told about such a situation, he can avoid serious trouble.

8. What are the relative dangers from the tests or forms of vaccination as compared with the dangers to the child who does not have the benefit of them?

ANSWER. Modern practices have made these protective measures very safe. If all the alleged cases of severe harm resulting from any of these measures had occurred in a single small community, it is probable that they would be exceeded in actual number by the

cases who have died or received serious injury to health as a result of *lack* of these protective measures. Compared with the danger to the child as a result of *not* having these tests and inoculations (when needed), the dangers from the tests and inoculations are infinitesimal. The greater risk is from not using these protective measures when the child needs them, and the only child who does not need them is one who has been proved to be protected already.

9. How do these forms of vaccination protect children?

ANSWER. They set up special protective reactions in the blood, as a result of which any of the special disease germs are destroyed when such germs attack the protected individual.

10. Why cannot this protection be given by good health, good care, hygienic living, and resistance inherited from parents?

ANSWER. Good health and correct living are not enough protection. To be effective, the protection must have been proved to be specific for the disease in question. Children actually do inherit some resistance to disease from parents, provided the parents have such resistance. However, Zingher and others have shown that this protection lasts only about six months after birth and that any protection the child has thereafter he must acquire —

- a.* Sometimes through an attack of the disease, and this protection is not always permanent.
- b.* More often through mild exposures to the disease, where he has been able to throw it off. One

never knows about these exposures, except when a child develops the disease; often the source cannot be found.

- c. By definite artificial means, such as inoculations. The last is the surest way and the only reliable or desirable one, in the case of smallpox, diphtheria, and scarlet fever.

11. Are children of the higher social classes less likely to take these diseases than other children?

ANSWER. Absolutely not. They are in greater danger of taking them, as has been shown in studies in the Horace Mann School, the Riverdale Country School, and in other schools where about eighty per cent of the pupils tested were shown to be susceptible to diphtheria and scarlet fever. Children in public schools in crowded districts were far less susceptible, owing to repeated small exposures to these diseases. On the other hand, many more cases of these contagious diseases occur in the more crowded districts. Very many individuals not vaccinated against smallpox within five years are susceptible. These facts strengthen the opinion that all children require the artificial protection provided by vaccination and inoculations.

12. Should schools or Boards of Health provide means for the children and adults to secure these three types of protection, and the Schick and Dick tests as well?

ANSWER. Every child ought to be able to have these protective measures if he needs them, and he ought to be able to find out whether he does require such protection. The health authorities certainly ought to

make provision for such service until every child can secure the protection from his family physician or a clinic.

13. Do these protective measures protect only the child himself or is the community benefited as well? Is the chief purpose to protect the individual child or the community?

ANSWER. The individual child is in more or less constant danger of exposure to contagious diseases. Therefore he needs protection. But the only way to protect the community, and therefore the individuals in it, is to have as many persons as possible protected. If the contagious disease has no fertile soil in which to grow (i.e., if everyone is protected and can throw the disease off), then the disease will soon be eradicated. These protective measures, to be completely successful, ought to be nationally or even universally used.

14. Since these methods are so excellent, have physicians, superintendents, principals, and teachers been so protected?

ANSWER. The teacher or school officer, being in contact with school children, and being subject to exposures to contagious diseases elsewhere in the community also, needs these protective measures. While it is true that, in general, the older the individual, the less susceptible he or she is to contagious diseases, this does not mean, necessarily, that a given individual will escape taking such diseases, if exposed. Furthermore, in general, an adult, if he or she takes such diseases, undergoes as much or more discomfort and

danger than a child. Many school officers, physicians, nurses, and teachers are protected by the methods advocated here. Both authors of this book have had these methods used on themselves.

15. Isn't the serum idea being overdone? Will not harm come from so many vaccinations, tests, and inoculations?

ANSWER. The "serum idea" is an instance of the newer custom of physicians to use scientific methods to *prevent* disease. Vaccinations and inoculations are specific for one disease only, and they act by strengthening to the point of efficiency specific forces already existing in the body when the individual is shown by testing to need such extra protection.

The serum idea is not overdone, because each vaccination, test, or inoculation has practically no relation (except statistically) to any other method used to avoid some other disease. Since one often must be *treated* for several *diseases* at one time, if one is *ill* with them, it is equally logical to be *protected*, while *well*, against several diseases by what may be considered *protective* or *preventive treatment*. There is every reason to believe that no harm and much benefit result from the artificial protection acquired. Consider these measures "health insurance."

16. If these measures are safe, why do short periods of discomfort occur during the process of acquiring this protection; viz., a few hours or days after the vaccination or inoculation is given?

ANSWER. This is the price to be paid for protection. Any such discomfort compares very favorably with the

inconvenience and discomfort arising from the mildest possible attack of any of these diseases. There is always a distinct danger from any attack of any disease, no matter how mild the case may be. Usually the more severe the reaction resulting from the vaccination or inoculation, the more severe would be an attack of the disease, because it is found that the more severe reactions occur after the inoculations of persons who are shown by testing to be very susceptible to the disease against which they are being protected.

Intelligent care following inoculation will lessen greatly any reactions. For instance, if typhoid inoculations are given late in the afternoon and the individual goes to bed at once and remains there till next morning, the reaction may not even be perceptible to the person inoculated. Similarly, after inoculations against diphtheria and scarlet fever, and following vaccination against smallpox, if the limb where the material is administered is not used vigorously during the period when the local reaction is present, the discomfort will be much less. Pitching a baseball game immediately after an inoculation against diphtheria will result in a much sorcer arm than would occur otherwise.

17. What attitude is to be taken toward literature which attacks these tests, vaccinations, and inoculations?

ANSWER. Be sure to understand clearly what is being discussed. Do not confuse laboratory tests for ascertaining the strength of serums, with clinical facts. If possible, take the literature to some physician or health officer and ask him to explain the circular. He can explain scientific methods which confuse the layman

and with which the layman has no familiarity. Arrive at a definite opinion of this preventive work only after a careful study of all available facts and points of view. Do not use "snap judgment." All these preventive measures will bear thorough investigation and should be supported only if, when, and because they are known to be scientifically sound.

NOTE. For technical points dealing with these tests and protective measures, inquiries should be referred to physicians.

CHAPTER FOURTEEN

DEFINITIONS AND EXPLANATIONS

Age incidence. In general, the older the individual, the less likely he is to take a disease. However, there is no assurance whatsoever that he will not take it, except such assurance as may arise from tests or other proof that he is immune. The only other proof would be a previous attack of the disease, and this does not hold for diphtheria, tuberculosis, and trachoma, at least.

Allergy (sensitization). Where a person gets characteristic symptoms from the use of or exposure to certain proteins. Hay fever, asthma, shellfish rash, and strawberry rash are examples.

Carriers. Persons who, without symptoms of a communicable disease, are capable of conveying the disease to others. Carriers are of three types:

1. Those who do not have the disease in active form at any time.
2. Those who have had the disease, and still carry in conveyable form the active cause of the disease.
3. Those who, perhaps, have the disease in mild form, without its being suspected or diagnosed.

Cleaning. This term signifies the removal, by scrubbing and washing, of organic matter on which and in which bacteria may find favorable conditions for prolonging life and virulence; also the removal, by the same means, of bacteria adherent to surfaces.

Clinical symptoms. Manifestations of a disease as observed by the doctor.

Contact. A contact is any person or animal known to have been sufficiently near to an infected human

being or animal to have been exposed to transfer of infectious material, either directly or by articles freshly soiled with such material.

Desquamation. Peeling of dead skin.

Dick Test. A test for determining susceptibility to scarlet fever. The theory, technic, and interpretations are the same as for the Schick Test, except that the test spots are examined after twenty-four hours. Persons with negative Dick Tests are considered immune to scarlet fever; those with positive tests will take the disease, if exposure is sufficient. Artificial immunity can be conveyed:

1. For a brief period, but immediately, by the special serum.
2. For a longer (as yet undetermined) period, but only after several months have elapsed after inoculation, by the Dick inoculation material. No immunity is to be expected after the inoculations, unless the Dick Test is negative thereafter. The retest is done about three months or more after the inoculations.

Practically no general reaction results from the test. The reaction from the inoculations is the usual one for all protective inoculations (headache and a feeling of general upset for not over twenty-four hours, if at all), plus a fine rash in some cases (those individuals with the least natural immunity to the disease).

Disease designations: communicable, contagious, infectious. These adjectives are all used to describe diseases which may be transferred from one person to another. Many prefer to designate such diseases as measles as contagious; such diseases as itch and ringworm as infectious; and the whole group as com-

municable. In practice, the term *infectious* is used infrequently and the words *communicable* and *contagious* are used indiscriminately to describe both classes of "catching" diseases.

Disinfection, concurrent, during the illness; **terminal**, at the end of the illness.

Education in personal cleanliness. By this phrase it is intended to include all the various means available to impress upon the members of the community, young and old — especially when communicable disease is prevalent or during epidemics — by spoken and printed word, and by illustration and suggestion, the necessity of

1. Washing the body daily with soap and water.
2. Washing the hands in soap and water after voiding bowels or bladder and always before eating.
3. Keeping hands and unclean articles, or articles which have been used for toilet purposes by others, away from mouth, nose, eyes, ears, and genital organs.
4. Avoiding the use of common or unclean eating, drinking, or toilet articles of any kind, such as towels, handkerchiefs, hairbrushes, drinking cups, pipes, etc.
5. Avoiding direct exposure to the spray from the noses and mouths of people who cough or sneeze, or laugh and talk loudly, with wide-open mouth or in an explosive manner.

Exposure of a class in school. In general, it may be stated that if the child coming down with a contagious disease was absent from school for twenty-four hours or more before any signs of illness (not signs of the definite disease, but any signs of illness) developed, then the room is *not* exposed. Otherwise an exposure of some degree has taken place, the degree depending on

the symptoms exhibited and the closeness and length of contact with other children.

Fumigation. By fumigation is meant a process by which the destruction of insects, such as mosquitoes and body lice, and animals, as rats, is accomplished by the employment of gaseous agents, such as formaldehyde or hydrocyanic acid.

Immune. An immune is a person who, if exposed, will not take a contagious disease. Immunity may be natural or it may be acquired by such methods as vaccination and inoculation or, in some cases, by an attack of the disease. It is not general but is specific for a single disease. Thus a person may be immune to diphtheria and non-immune to chickenpox. Immunity is not necessarily permanent.

Incubation period. Time between exposure and first sign of illness.

Isolation. This is the limitation put upon the movements of known sick or "carrier" individuals or animals. Such isolated persons are kept separate from other persons under such conditions as will prevent the direct or indirect conveyance of the infectious agent to susceptible persons. This usually means that the child has no contact with other children in the family, through toilets or otherwise; that all dishes or other objects in contact with the case are carefully sterilized before persons not in attendance upon the patient touch them again. (Sometimes, as in smallpox, diphtheria, and scarlet fever, very strict regulations are enforced, and these are prescribed and carried out under the direction of the Board of Health.) With proper isolation, the same privileges are usually allowed

to other persons in the household, that would be allowed if they left home and lived elsewhere during the course of the disease, or if the case were removed to a contagious-disease hospital.

Leaving the home and living elsewhere (see private school rule cards, pages 46-52). This means that there must be *no contact* with the home during the period of contagion. It is not permissible to return for clothing or meals, or for any other purpose. Clothing removed from the home at the time when the exposed individual leaves, ought to be sunned and aired at least, and in many instances boiled and washed or otherwise sterilized.

Lesions. Local manifestations of a disease, such as sores or local degenerations.

Non-immune. Capable of taking communicable disease, if exposed.

Prophylaxis. Prevention.

Quarantine. Limitations put upon exposed or "contact" individuals or persons for a period of time equal to the incubation period of the disease. Not the same as isolation. (*See Isolation.*)

Renovation. By renovation is meant, in addition to cleansing, such treatment of the walls, floors, and ceilings of rooms or houses as may be necessary to place the premises in a satisfactory sanitary condition.

Report of a disease. By report of a disease is meant the notification to the health authorities — and in case of communicable disease in animals, also to the respective departments of agriculture who have immediate jurisdiction — that a case of communicable disease exists in a specified person or animal at a given address.

In case of a school child, it is desirable to state what school and what room the child is attending.

Schick Test. A thoroughly recognized test for immunity to diphtheria. It is performed by placing a drop of test material into the skin of one forearm and a drop of control material into the skin of the other forearm. In positive or non-immune cases a red spot will develop around the drop of test material and will remain for at least a week, usually longer. No reaction will develop on the other forearm which will not fade within three or four days. The test is "read" on the fifth to seventh day after the material is injected. No reaction lasting over three or four days will develop on either arm in the negative or immune cases. Other brief reactions are due to the protein in the test and control material.

Non-immune persons may be protected —

1. For a brief period, not over a few weeks, but immediately, by antitoxin.
2. For at least eleven years, but not in full force for about six months, by three or more inoculations of toxin-antitoxin given a week apart, and followed in six months by a second Schick Test, which must be negative if immunity is expected. Otherwise, further inoculations are given (usually one or two more) and a retest made in another six months. Unless the Schick Test finally becomes negative, no protection can be guaranteed.

No general reaction occurs after the Schick Test. The usual general reaction plus local redness occurs after the inoculations; the less-protected individuals have the more severe reactions.

Susceptibles. Non-immunes.

Vaccination. A positive protection against smallpox if the required conditions are fulfilled. Immunity appears on the eighth day after vaccination.

A proof of the efficiency and the period of protection from vaccination occurred in Detroit, where no case of smallpox was found among exposed people who had been vaccinated successfully within five years. There were twelve cases among exposed people who had been vaccinated from six to ten years previously; thirty-five who had been vaccinated from eleven to twenty-five years previously; and sixty-six who had been vaccinated successfully over twenty-five years previously. But all this group were only seven per cent of the cases of the disease which occurred, and there were no deaths among persons who had a typical vaccination scar.¹

Because there is much confusion regarding methods and types of vaccination, the following information may prove helpful.

New York City health authorities wisely advise a single superficial scratch with a sterile needle. The vaccine is gently rubbed into the scratch.

Types of reaction.

1. Primary reaction (*vaccinia*), the normal "take." A small pimple (*papule*) appears on the third to fifth day, which promptly develops into a small water blister (*vesicle*) surrounded by an area of redness. Both vesicle and area of redness (*areola*) enlarge, the vesicle becoming a pus blister (*pustule*), which reaches

¹ Sears, "Vaccination and Smallpox," *New York State Journal of Medicine*, Vol. 25, No. 15, page 682 (April 24, 1925).

its maximum size on the tenth day. Usually the resulting crust falls off after three or four weeks.

2. Accelerated reaction (vaccinoid). This occurs in persons previously vaccinated, or who have had smallpox previously but who have partly lost their immunity. The reaction is more rapid than the primary type. The period of incubation is three days or less; the height of the pustular stage is reached about the sixth or eighth day. All symptoms are less severe than the primary reaction.

3. Reaction of immunity (immediate reaction). This occurs in persons with a high degree of immunity. A small reddened papule appears in twenty-four to forty-eight hours, but it begins to decline within seventy-two hours. Usually no vesicle appears. A control scratch ought to be used on the other arm if this reaction of immunity is expected. (An excellent article on this is Hooker's "The Skin Test for Immunity to Smallpox," *Boston Medical and Surgical Journal*, Vol. 193, No. 5, pages 212-215; July 30, 1925.)

Care after vaccination.

Vaccination, although one of the simplest and safest operations known, requires proper care till the wound is healed.

Under no conditions use a vaccination shield or thick dressing.

The best dressing consists of a few layers of sterile gauze. Purchase a package of sterile gauze sponges at the drug store (ask for sponges in separate envelopes). Fasten the dressing loosely with short strips of adhesive plaster.

Virulence. Degree of "poisonousness."

Virus, filterable. A technical term which a teacher can interpret to mean that the cause of the disease is not known. Actually, it means that the organism is too small to be detected except by most complicated special laboratory and microscopic methods.

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